

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
3 October 2002 (03.10.2002)

PCT

(10) International Publication Number
WO 02/076488 A1

(51) International Patent Classification⁷: **A61K 38/00**,
C07K 1/00

(21) International Application Number: PCT/US02/08276

(22) International Filing Date: 19 March 2002 (19.03.2002)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/277,340 21 March 2001 (21.03.2001) US
60/306,171 19 July 2001 (19.07.2001) US
60/331,287 13 November 2001 (13.11.2001) US

(71) Applicant (for all designated States except US): **HUMAN GENOME SCIENCES, INC.** [US/US]; 9410 Key West Avenue, Rockville, MD 20850 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **ROSEN, Craig, A.** [US/US]; 22400 Rolling Hill Lane, Laytonsville, MD 20882 (US). **RUBEN, Steven, M.** [US/US]; 18528 Heritage Hills Drive, Olney, MD 20832 (US).

(74) Agent: **HOOVER, Kenley, K.**; Human Genome Sciences, Inc., 9410 Key West Avenue, Rockville, MD 20850 (US).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- with sequence listing part of description published separately in electronic form and available upon request from the International Bureau

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: HUMAN SECRETED PROTEINS

(57) Abstract: The present invention relates to human secreted polypeptides, and isolated nucleic acid molecules encoding said polypeptides, useful for diagnosing and treating gastrointestinal diseases, disorders, and/or conditions related thereto. Antibodies that bind these polypeptides are also encompassed by the present invention. Also encompassed by the invention are vectors, host cells, and recombinant and synthetic methods for producing said polynucleotides, polypeptides, and/or antibodies. The invention further encompasses screening methods for identifying agonists and antagonists of polynucleotides and polypeptides of the invention. The present invention further encompasses methods and compositions for inhibiting or enhancing the production and function of the polypeptides of the present invention.

WO 02/076488 A1

Human Secreted Proteins

5

Field of the Invention

The present invention relates to human secreted proteins/polypeptides, and isolated nucleic acid molecules encoding said proteins/polypeptides, useful for detecting, preventing, diagnosing, prognosticating, treating, and/or ameliorating gastrointestinal diseases and disorders. Antibodies that bind these polypeptides are also encompassed by the present invention. Also encompassed by the invention are vectors, host cells, and recombinant and synthetic methods for producing said polynucleotides, polypeptides, and/or antibodies. The invention further encompasses screening methods for identifying agonists and antagonists of polynucleotides and polypeptides of the invention. The present invention further encompasses methods and compositions for inhibiting or enhancing the production and function of the polypeptides of the present invention.

15

Background of the Invention

The human digestive system is a collection of specialized organs and body tissues that prepare food for use by hundreds of millions of body cells. Food when eaten cannot reach cells because it cannot pass through the intestinal walls to the bloodstream and, if it could would not be in a useful chemical state. The gastrointestinal system modifies food physically and chemically and disposes of unusable waste. Physical and chemical modification (digestion) depends on exocrine and endocrine secretions and controlled movement of food through the digestive tract.

20

The three fundamental processes of the digestive system are: secretion (e.g., delivery of enzymes, mucus, ions and the like into the lumen, and hormones into blood), absorption (e.g., transport of water, ions and nutrients from the lumen, across the epithelium and into blood), and motility (e.g., contractions of smooth muscle in the wall of the tube that crush, mix and propel its contents). Control of digestive function is achieved through a combination of electrical and hormonal messages which originate either within the digestive system's own nervous and endocrine systems, as well as from the central nervous system and from endocrine organs such as the adrenal gland.

25

30

The digestive system is composed of the digestive or alimentary tube and accessory digestive organs, which include the Mouth (e.g., tongue, taste buds, soft palate pharynx, salivary glands, teeth), Esophagus, Stomach, Liver, Gallbladder, Pancreas, Small Intestine (e.g., duodenum, jejunum, and ileum), and Large Intestine (e.g., caecum).

35

Common digestive system disorders including infections, inflammations, ulcers and cancers of the digestive or alimentary tube and above listed accessory digestive organs are described in more detail below.

5 *Disorders of the Mouth*

The mouth comprises an area from the lips to the front of the tonsils (fauces) at the start of the throat. The mouth contains the gums, teeth, and the tongue, together with salivary glands which secrete fluids that lubricate and begin food digestion as it is chewed. The roof of the mouth consists of the hard palate at the front and the soft palate at the back. The floor of the mouth
10 comprises the tongue (controlled by a number of muscles attached to bones in the neck). At the front and sides of the tongue there are a number of taste buds. These respond to different tastes at different places (e.g., sweet, salty, sour, and bitter). At the back of the tongue there are some swellings which consist of lymphoid tissue. Underneath the tongue there is a midline attachment (frenulum) and the opening of several of the salivary ducts. There are other salivary glands (the
15 parotid glands) lying over the angle of the jaw with a duct opening to the inside of the cheek at about the level of the second molar tooth.

Diseases and disorders of the mouth are vary greatly in manifested symptoms, frequencies, severities, and causes. Accordingly, diseases and disorders of the mouth may be caused or initiated by viruses, bacteria, genetics (e.g. autoimmune disorders), physical or chemical trauma,
20 etc. For example, diseases and disorders of the mouth include canker sores (aphthous ulcers), herpetic stomatitis leukoplakia, gingivostomatitis, oral cancer, oral lichen lanus, oral thrush, histoplasmosis, salivary gland infections, glossitis, Hand, Foot and Mouth disease, salivary duct stones, mumps, etc.

25 *Disorders of the Esophagus*

Disorders of the Esophagus include dysphagia (e.g., difficulty in swallowing) and odynophagia (e.g., difficulty in swallowing accompanied by pain). Inflammatory disorders of the esophagus result from a variety of causes; for example, ingestion of noxious materials (e.g., corrosive esophagitis), lodgment of foreign bodies, or a complex of events associated with reflux
30 of gastric contents from the stomach into the lower esophagus (e.g., peptic esophagitis).

Disorders of the motility of the esophagus tend to be either precipitated or aggravated at times of nervous stress. A disorder commonly due to obesity is gastric reflux. Persisting reflux of gastric contents with acid and digesting enzymes leads to chemical inflammation of the lining of the esophagus and ultimately to (peptic) ulceration. If inadequately treated, the process leads to
35 submucosal fibrosis and stricturing, and, besides the symptoms of heartburn and regurgitation, the patient experiences pain on eating and swallowing.

Further disorders of the esophagus include the formation of diverticula. A serious injury to the esophagus is spontaneous rupture. It can occur in patients who have been vomiting or retching and in debilitated elderly persons with chronic lung disease. A rupture of this type confined to the mucosa only at the junction of the linings of the esophagus and stomach is called a Mallory-Weiss lesion.

Benign tumors of the esophagus originate in the submucosal tissues and principally are leiomyomas (tumors composed of smooth muscle tissue) or lipomas (tumors composed of adipose, or fat, tissues). Malignant tumors are either epidermal cancers, made up of unorganized aggregates of cells, or adenocarcinomas, in which there are gland-like formations. Cancers arising from squamous tissues are found at all levels of the organ, whereas adenocarcinomas are more common at the lower end where a number of glands of gastric origin are normally present. The prognosis is poor because diagnosis is difficult and the tumor has usually been growing for one or two years before symptoms are apparent.

Disorders of the stomach

Any disorder that affects the power of coordination of the stomach muscles is capable of producing symptoms ranging from those that are mildly unpleasant (e.g., anorexia and nausea) to others that are life-threatening. The intrinsic muscles of the stomach are innervated by branches of the vagus nerves, which travel along the esophagus from their point of emergence in the brain stem. Severing these nerves or altering their function by the use of anticholinergic medication may produce temporary or more prolonged change in the ability of the stomach to empty itself. Gastric retention may result from the degeneration of the nerves to the stomach that can result from diabetes mellitus. Obstruction due to scarring in the area of the gastric outlet, or to tumors encroaching on the lumen, causes the stomach to fill up with its own secretions as well as with partially digested food. In these circumstances, vomiting leads to dehydration and to electrolyte losses, which threaten life if not corrected.

Disorders of the stomach include ulcerative diseases, which involve mucosal breakdown either confined to the superficial layers of the mucosa (e.g., an erosion) or extending through the intrinsic layer of muscle of the mucosa into the tissues below (e.g., an ulcer). The circumstances that contribute to mucosal injury and ulcer formation include physical and chemical trauma that result from hot fluids and food, aspirin and other drugs, irritating spices, and pickling fluids. In addition, genetic factors are involved in the development of ulcers. The complications of peptic ulcers are hemorrhage, perforation, and obstruction of the outlet of the stomach (pyloric stenosis) by scarring of the duodenal bulb or of the pyloric channel. A diffuse inflammation of the stomach lining, gastritis, is usually an acute process caused by contaminated food, alcohol abuse, or by bacterial- or viral-induced inflammation of the gastrointestinal tract (gastroenteritis). The other form of gastritis is gastric atrophy, in which the thickness of the mucosa is diminished. Diffuse

gastric atrophy leads to partial loss of the glands and secreting cells throughout the stomach and may be associated with iron-deficiency anemia.

Malignant tumors of the stomach are common and are probably a result of both genetic and environmental factors. Gastric cancer affects men more often than women and accounts for about 20 percent of all deaths from cancers of the gastrointestinal tract in the United States. Other malignant tumors that involve the stomach are tumors ordinarily made up of lymphoid and connective tissue. Benign tumors, especially leiomyomas, are common and may, when large, cause massive hemorrhage. Polyps of the stomach are not common except in the presence of gastric atrophy.

Disorders of the Duodenum and Small Intestine

Primary cancer of the duodenum is an infrequent disease, however, benign tumors of the duodenum, particularly polyps and carcinoids, are more frequent. Cancers of the common bile duct or of the pancreas are important causes of death. A common disorder of the small intestine, distension, is caused by lack of coordination of the inner circular and outer longitudinal muscular layers of the intestinal wall which usually results in an accumulation of excess contents in the lumen. The most common cause of disturbed motility in the small intestine is food that contains an unsuitable additive, organism, or component. One of the most serious problems in small intestine are motor disturbances which arise from an intestinal obstruction that results from an actual encroachment on the bowel by an adhesive band or from an internal block produced by a tumor or gallstone. In addition, as profound an obstruction results when a portion of the intestine undergoes partial necrosis, or death, from failure of its blood supply.

The extremely common disorder known as the irritable bowel syndrome is probably due to a disturbance of the motility of the whole intestinal tract. The symptoms vary from watery diarrhea to constipation and the passage of stools with difficulty. When the colon is involved, an excess of mucus is often observed in the stools. Occasionally the irritable bowel syndrome may be due to an allergy to a particular foodstuff. The syndrome may develop following an infection such as bacillary dysentery, after which the small intestine remains irritable for many months.

A further disorder, malabsorption occurs when the small intestine is unable to transport properly broken down products of digestive materials from the lumen of the intestine into the lymphatics or mesenteric veins, where they are distributed to the rest of the body. Defects in transport occur either because the absorptive cells of the intestine lack certain enzymes, whether by birth defect or by acquired disease, or because they are hindered in their work by other disease processes that infiltrate the tissues, disturb motility, permit bacteria to overpopulate the bowel, or block the pathways over which transport normally proceeds. A malabsorption disorder of unknown cause, tropical sprue, is associated with partial atrophy of the mucosa of the small intestine. Disorders of the small intestine also include bacterial and parasitic infections.

Appendicitis is an inflammation of the vermiform appendix that may be caused by infection or partial or total obstruction. Chronic inflammations of the small intestine include tuberculosis and regional enteritis (Crohn's disease). Celiac disease causes damage to the mucosa of the small intestine, though it is not clear whether it is caused by an immune reaction, or an inability to break down a toxic protein, gluten, to smaller peptide fractions. Studies of the immune function of those with celiac disease suggest that at least a major part of the process is a delayed hypersensitivity reaction and that the morphological changes are correlated with the presence of circulating antibodies to gluten. The mucosal reaction results in progressive atrophy, with dwarfing, if not complete disappearance, of the microvilli and villi that line the intestinal tract.

Disorders of the Large Intestine

A wide variety of diseases and disorders occur in the large intestine. A disease that is analogous to achalasia of the esophagus is an idiopathic condition called aganglionic megacolon, or Hirschsprung's disease. It is characterized by the absence of ganglion cells and normal nerve fibres from the distal (or lower) portion of the large intestine, which results in reduced neuromuscular transmission and ceased peristalsis. The entire colon slowly becomes more and more distended and thick-walled. Abscesses in the perianal area are common complicating features of many diseases and disorders of the large intestine. Fungal and bacterial infections are also common causes of large intestine disorders.

The most common form of chronic colitis, ulcerative colitis, is idiopathic. It varies from a mild inflammation of the mucosa of the rectum, giving rise to excessive mucus and some spotting of blood in the stools, to a severe, sudden, intense illness, with destruction of a large part of the colonic mucosa, considerable blood loss, toxemia and, less commonly, perforation. The most common variety affects only the rectum and sigmoid colon and is characterized by diarrhea and the passage of mucus. Apart from the greater tendency for fistulas to form and for the wall of the intestine to thicken until the channel is obstructed, Crohn's disease is distinguishable from ulcerative colitis by microscopic findings. In Crohn's disease, the maximum damage occurs beneath the mucosa, and lymphoid conglomerations, known as granulomata, are formed in the submucosa. Crohn's disease attacks the perianal tissues more often than does ulcerative colitis. Although these two diseases are not common, they are disabling.

Tumors of the colon are usually polyps or cancers. A peculiar form of polyp is the villous adenoma, often a slowly growing, fernlike structure that spreads along the surface of the colon for some distance. Cancers compress the colonic lumen to produce obstruction, they attach to neighbouring structures to produce pain, and they perforate to give rise to peritonitis. Cancers also may metastasize to distant organs before local symptoms appear.

Anorectal disorders related to defecation are more common in the Western world than elsewhere. These disorders usually take the form of fissures (cuts or cracks in the skin or mucous

membrane) at the junction of the anal mucous membrane with the skin between the thighs. Anal fistulas sometimes occur as complications of serious bowel disease, as in tuberculosis or Crohn's disease of the bowel, or in certain parasitic diseases. A more general disorder is the enlargement of veins of the rectum and anus to form external or internal hemorrhoids. Hemorrhoids protrude, are associated with anal itching and pain, and bleed, especially when they come in contact with hard stools.

Disorders of the Liver

A variety of agents, including viruses, drugs, environmental pollutants, genetic disorders, and systemic diseases, can affect the liver. The resulting disorders usually affect one of the three functional components of the liver: the hepatocyte (liver cell) itself, the bile secretory (cholangiolar) apparatus, or the blood vascular system. Most acute liver diseases are self-limited, and liver functioning returns to normal once the causes are removed or eliminated. In some cases, however, the acute disease process destroys massive areas of liver tissue in a short time, leading to extensive death (necrosis) of hepatic cells and often to death of the patient. Hepatitis may result from viral infections or toxic damage from drugs or poisons. When acute hepatitis lasts for six months or more, a slow but progressive destruction of the surrounding liver cells and bile ducts occurs, a stage called chronic active hepatitis. If hepatocellular damage is severe enough to destroy entire acini (clusters of lobules), they are often replaced with fibrous scar tissue. Bile canaliculi and hepatocytes regenerate in an irregular fashion adjacent to the scar tissue and result in a chronic condition called cirrhosis of the liver. Where inflammatory activity continues after the onset of cirrhosis, the disorderly regeneration of hepatocytes and cholangioles may lead to the development of hepatocellular or cholangiolar cancer.

Although a number of viruses affect the liver, including the cytomegalovirus of infancy and childhood and the Epstein-Barr virus of infectious mononucleosis, there are three distinctive transmissible viruses that are specifically known to cause acute damage to liver cells: hepatitis virus A (HAV), hepatitis virus B (HBV), and hepatitis virus non-A, non-B (NANB). The symptoms characteristic of the acute hepatitis caused by the HAV, HBV, and NANB viruses are essentially indistinguishable from one another.

Acute hepatitis also may be caused by the overconsumption of alcohol or other poisons, such as commercial solvents (e.g., carbon tetrachloride), acetaminophen, and certain fungi. Such agents are believed to cause hepatitis when the formation of their toxic intermediate metabolites in the liver cell (phase I reactions) is beyond the capacity of the hepatocyte to conjugate, or join them with another substance for detoxification (phase II reactions) and excretion. Acute canalicular (cholestatic) hepatitis is most commonly caused by certain drugs, such as chlorpromazine, that lead to idiosyncratic reactions or, at times, by hepatitis viruses. Acute congestive liver disease usually results from the sudden engorgement of the liver by fluids after congestive heart failure.

A prominent autoimmune liver disease is Wilson's disease, which is caused by abnormal deposits of large amounts of copper in the liver. Granulomatous hepatitis, a condition in which localized areas of inflammation (granulomas) appear in any portion of the liver lobule, is a type of inflammatory disorder associated with many systemic diseases, including tuberculosis, sarcoidosis, schistosomiasis, and certain drug reactions. Granulomatous hepatitis rarely leads to serious interference with hepatic function, although it is often chronic. The end result of many forms of chronic liver injury is cirrhosis, or scarring of liver tissue in response to previous acinar necrosis and irregular regeneration of liver nodules and bile ducts.

Primary biliary cirrhosis, a widespread, though uncommon, autoimmune inflammatory disease of bile ducts, is a disorder primarily affecting middle-aged and older women. Secondary biliary cirrhosis results from chronic obstruction or recurrent infection in the extrahepatic bile ducts caused by strictures, gallstones, or tumors. Infestation of the biliary tract with a liver fluke, *Clonorchis sinensis*, is a cause of secondary biliary cirrhosis in Asia.

Portal hypertension, the increased pressure in the portal vein and its tributaries that is the result of impediments to venous flow into the liver, is brought about by the scarring characteristic of the cirrhotic process. The increased pressure causes feeders of the portal vein to distend markedly, producing varices, or dilations of the veins. When varices are located in superficial tissues, they may rupture and bleed profusely. Two such locations are the lower esophagus and the perianal region. The accumulation of fluid in the abdominal cavity, or ascites, is related to portal hypertension, significant reduction in serum albumin, and renal retention of sodium. When albumin levels in blood are lower than normal, there is a marked reduction in the force that holds plasma water within the blood vessels and normally resists the effects of the intravascular pressure. The resulting increase in intravascular pressure, coupled with the increased internal pressure caused by the portal venous obstruction in the liver, leads to massive losses of plasma water into the abdominal cavity. The associated reduction of blood flow to the kidneys causes increased elaboration of the hormone aldosterone, which, in turn, causes the retention of sodium and water and a reduction in urinary output. In addition, because the movement of intestinal lymph into the liver is blocked by the cirrhotic process in the liver, the backflow of this fluid into the abdominal cavity is greatly increased. A progressive reduction in kidney function that often occurs in persons with advanced acute or chronic liver disease, hepatorenal syndrome, probably results from an inadequate perfusion of blood through the cortical (outer) portions of the kidneys, where most removal of waste products occurs. With advanced hepatocytic dysfunction, a spasm of blood vessels in the renal cortex can occur, often with good blood flow to the rest of the kidney. This spasm results in progressive failure in kidney function and often leads to death.

Although not uncommon, cancer originating in the liver, usually in hepatocytes and less frequently in cells of bile duct origin, is rare in the West and is almost always associated with active cirrhosis, particularly the form found in patients with chronic hepatitis. Long exposure to

certain environmental poisons, such as vinyl chloride or carbon tetrachloride, has also been shown to lead to hepatic cancer. Cancers arising elsewhere in the body, particularly in abdominal organs, lungs, and lymphoid tissue, commonly lead to metastatic cancer in the liver and are by far the most frequent type of hepatic malignancy. Various benign types of tumors and cysts arise from certain components of the liver, such as the hepatocytes (adenomas) or blood vessels (hemangiomas). While the cause of these lesions is not always clear, hepatic adenomas are associated with the prolonged use of female sex hormones (estrogens). Benign cysts in the liver may occur as congenital defects or as the result of infections from infestation of the dog tapeworm (*Echinococcus granulosus*). Abscesses on the liver result from the spread of infection from the biliary tract or from other parts of the body, especially the appendix and the pelvic organs. Specific liver abscesses also result from infections with the intestinal parasite *Entamoeba histolytica*.

Disorders of the Biliary Tract

Cholelithiasis, or the formation of gallstones in the gallbladder, is the most common disease of the biliary tract. There are three types of Gallstones: stones containing primarily calcium bilirubinate (pigment stones); stones containing 25 percent or more of cholesterol; and stones composed of variable mixtures of both bilirubin and cholesterol (mixed gallstones). Pigment stones are the result of an increased amount of bilirubin in the liver (due to hemolytic disease) and the consequent secretion into the biliary tract of increased amounts of the water-soluble conjugate, bilirubin diglucuronide, a pigment that is normally secreted in the urine. Cholesterol and mixed cholesterol-bilirubinate stones occur when the proportion of cholesterol in bile exceeds the capacity of bile acids and lecithin to contain the total amount of cholesterol in micellar colloidal solution. Postcholecystectomy syndrome comprises painful attacks, often resembling preoperative symptoms, that occasionally occur following the surgical removal of gallstones and the gallbladder. These attacks may be related to intermittent muscular spasms of the sphincter of Oddi or of the bile ducts.

Cancer of the biliary tract is rare but may occur in almost any area, including the gallbladder, the hepatic ducts, the common bile duct, or the ampulla of Vater. In cancer of the bile duct, congenital cysts and parasitic infections, such as liver flukes, seem to lead to increased risks. Persons with extensive chronic ulcerative colitis also show a greater than normal incidence of bile duct carcinoma.

Jaundice, or yellowing of the skin, scleras, and mucous membranes, occurs whenever the level of bilirubin in the blood is significantly above normal. This condition is evident in three different types of disorders including, unconjugated, or hemolytic, jaundice; hepatocellular jaundice; and cholestatic, or obstructive jaundice. Unconjugated jaundice results when the amount of bilirubin produced from hemoglobin by the destruction of red blood cells or muscle tissue (myoglobin) overwhelms the normal capacity of the liver to transport it or when the ability of the

liver to conjugate normal amounts of bilirubin into bilirubin diglucuronide is significantly reduced by inadequate intracellular transport or enzyme systems. Hepatocellular jaundice arises when liver cells are damaged so severely that their ability to transport bilirubin diglucuronide into the biliary system is reduced, allowing some of this yellow pigment to regurgitate into the bloodstream.

- 5 Cholestatic jaundice, occurs when essentially normal liver cells are unable to transport bilirubin either through the hepatocytic-bile capillary membrane, because of damage in that area, or through the biliary tract, because of anatomical obstructions (e.g., atresias, gallstones, cancer).

Disorders of the Pancreas

- 10 Inflammation of the pancreas, or pancreatitis, is probably the most common disease of this organ. The disorder may be confined to either singular or repeated acute episodes, or it may become a chronic disease. There are many factors associated with the onset of pancreatitis, including direct injury, certain drugs, viral infections, heredity, hyperlipidemia (increased levels of blood fats), and congenital derangements of the ductal system. Localized, severe abdominal and
15 midback pain resulting from enzyme leakage, tissue damage, and nerve irritation is the most common symptom of acute pancreatitis. In severe cases, respiratory failure, shock, and even death may occur. Chronic pancreatitis rarely follows repeated acute attacks. It seems instead to be a separate disorder that results in mucus plugs and precipitation of calcium salts in the smaller pancreatic ducts. Mucous production and plugging of the pancreas in Cystic fibrosis patients
20 almost invariably causes destruction and scarring of the acinar tissue, usually without damaging the islets of Langerhans. A similar process in the hepatic biliary system produces foci of fibrosis and bile duct proliferation, a singular form of cirrhosis.

- The discovery of new human digestive system associated polynucleotides, the polypeptides encoded by them, and antibodies that immunospecifically bind these polypeptides,
25 satisfies a need in the art by providing new compositions which are useful in detecting, preventing, diagnosing, prognosticating, treating, and/or ameliorating diseases and disorders of the digestive system, including, but not limited to, dysphagia, odynophagia, congenital disorders of the esophagus, gastric reflux, diverticula, Mallory-Weiss lesions, leiomyomas of the esophagus, lipoma, anorexia, nausea, ulcerative disease, pyloric stenosis, gastroenteritis, gastritis, gastric
30 atrophy, gastric cancer, benign tumors of the duodenum (e.g., polyps and carcinoids), pancreatic cancer, cancer of the bile duct, distension, irritable bowel syndrome, malabsorption, congenital disorders of the small intestine (e.g., Meckel's diverticulum, multiple diverticula), bacterial and parasitic infection (e.g., traveler's diarrhea, typhoid, paratyphoid, cholera, roundworms, tapeworms, amoebae, hookworms, strongyloides, threadworms, and blood flukes), megacolon
35 (e.g., Hirschsprung's disease, aganglionic megacolon, acquired megacolon), colitis (e.g., due to bacterial, fungal, or parasitic infection, ulcerative colitis), tumors of the colon (e.g., polyps or cancers), anorectal disorders (e.g., anal fistulas, hemorrhoids, hepatitis (e.g., acute, chronic,

persistent hepatitis, viral (for example, hepatitis caused by hepatitis virus A (HAV), hepatitis virus B (HBV), and hepatitis virus non-A, non-B (NANB) infection), congenital disorders of the liver (e.g., Wilson's disease, hemochromatosis, cystic fibrosis, biliary atresia, and alpha1-antitrypsin deficiency), cirrhosis, portal hypertension, cholelithiasis, cancer of the biliary tract, jaundice (e.g.,
5 unconjugated, hemolytic, hepatocellular, cholestatic, or obstructive jaundice).

The discovery of new human gastrointestinal-associated polynucleotides, the polypeptides encoded by them, and antibodies that immunospecifically bind these polypeptides, satisfies a need in the art by providing new compositions which are useful in detecting, preventing, diagnosing, prognosticating, treating, and/or ameliorating gastrointestinal-specific diseases and disorders
10 described in more detail below.

Summary of the Invention

The present invention encompasses human secreted proteins/polypeptides, and isolated nucleic acid molecules encoding said proteins/polypeptides, useful for detecting, preventing,
15 diagnosing, prognosticating, treating, and/or ameliorating gastrointestinal diseases and disorders. Antibodies that bind these polypeptides are also encompassed by the present invention; as are vectors, host cells, and recombinant and synthetic methods for producing said polynucleotides, polypeptides, and/or antibodies. The invention further encompasses screening methods for identifying agonists and antagonists of polynucleotides and polypeptides of the invention. The
20 present invention also encompasses methods and compositions for inhibiting or enhancing the production and function of the polypeptides of the present invention.

Detailed Description

25

Polynucleotides and Polypeptides of the Invention

Description of Table 1A

Table 1A summarizes information concerning certain polynucleotides and polypeptides of the invention. The first column provides the gene number in the application for each clone
30 identifier. The second column provides a unique clone identifier, "Clone ID:", for a cDNA clone related to each contig sequence disclosed in Table 1A. Third column, the cDNA Clones identified in the second column were deposited as indicated in the third column (i.e. by ATCC Deposit No:Z and deposit date). Some of the deposits contain multiple different clones corresponding to the same gene. In the fourth column, "Vector" refers to the type of vector contained in the
35 corresponding cDNA Clone identified in the second column. In the fifth column, the nucleotide sequence identified as "NT SEQ ID NO:X" was assembled from partially homologous

("overlapping") sequences obtained from the corresponding cDNA clone identified in the second column and, in some cases, from additional related cDNA clones. The overlapping sequences were assembled into a single contiguous sequence of high redundancy (usually three to five overlapping sequences at each nucleotide position), resulting in a final sequence identified as SEQ ID NO:X. In the sixth column, "Total NT Seq." refers to the total number of nucleotides in the contig sequence identified as SEQ ID NO:X." The deposited clone may contain all or most of these sequences, reflected by the nucleotide position indicated as "5' NT of Clone Seq." (seventh column) and the "3' NT of Clone Seq." (eighth column) of SEQ ID NO:X. In the ninth column, the nucleotide position of SEQ ID NO:X of the putative start codon (methionine) is identified as "5' NT of Start Codon." Similarly, in column ten, the nucleotide position of SEQ ID NO:X of the predicted signal sequence is identified as "5' NT of First AA of Signal Pep." In the eleventh column, the translated amino acid sequence, beginning with the methionine, is identified as "AA SEQ ID NO:Y," although other reading frames can also be routinely translated using known molecular biology techniques. The polypeptides produced by these alternative open reading frames are specifically contemplated by the present invention.

In the twelfth and thirteenth columns of Table 1A, the first and last amino acid position of SEQ ID NO:Y of the predicted signal peptide is identified as "First AA of Sig Pep" and "Last AA of Sig Pep." In the fourteenth column, the predicted first amino acid position of SEQ ID NO:Y of the secreted portion is identified as "Predicted First AA of Secreted Portion". The amino acid position of SEQ ID NO:Y of the last amino acid encoded by the open reading frame is identified in the fifteenth column as "Last AA of ORF".

SEQ ID NO:X (where X may be any of the polynucleotide sequences disclosed in the sequence listing) and the translated SEQ ID NO:Y (where Y may be any of the polypeptide sequences disclosed in the sequence listing) are sufficiently accurate and otherwise suitable for a variety of uses well known in the art and described further below. For instance, SEQ ID NO:X is useful for designing nucleic acid hybridization probes that will detect nucleic acid sequences contained in SEQ ID NO:X or the cDNA contained in the deposited clone. These probes will also hybridize to nucleic acid molecules in biological samples, thereby enabling a variety of forensic and diagnostic methods of the invention. Similarly, polypeptides identified from SEQ ID NO:Y may be used, for example, to generate antibodies which bind specifically to proteins containing the polypeptides and the secreted proteins encoded by the cDNA clones identified in Table 1A and/or elsewhere herein

Nevertheless, DNA sequences generated by sequencing reactions can contain sequencing errors. The errors exist as misidentified nucleotides, or as insertions or deletions of nucleotides in the generated DNA sequence. The erroneously inserted or deleted nucleotides cause frame shifts in the reading frames of the predicted amino acid sequence. In these cases, the predicted amino acid sequence diverges from the actual amino acid sequence, even though the generated DNA

sequence may be greater than 99.9% identical to the actual DNA sequence (for example, one base insertion or deletion in an open reading frame of over 1000 bases).

Accordingly, for those applications requiring precision in the nucleotide sequence or the amino acid sequence, the present invention provides not only the generated nucleotide sequence identified as SEQ ID NO:X, and the predicted translated amino acid sequence identified as SEQ ID NO:Y, but also a sample of plasmid DNA containing a human cDNA of the invention deposited with the ATCC, as set forth in Table 1A. The nucleotide sequence of each deposited plasmid can readily be determined by sequencing the deposited plasmid in accordance with known methods

The predicted amino acid sequence can then be verified from such deposits. Moreover, the amino acid sequence of the protein encoded by a particular plasmid can also be directly determined by peptide sequencing or by expressing the protein in a suitable host cell containing the deposited human cDNA, collecting the protein, and determining its sequence.

Also provided in Table 1A is the name of the vector which contains the cDNA plasmid. Each vector is routinely used in the art. The following additional information is provided for convenience.

Vectors Lambda Zap (U.S. Patent Nos. 5,128,256 and 5,286,636), Uni-Zap XR (U.S. Patent Nos. 5,128, 256 and 5,286,636), Zap Express (U.S. Patent Nos. 5,128,256 and 5,286,636), pBluescript (pBS) (Short, J. M. et al., *Nucleic Acids Res.* 16:7583-7600 (1988); Altting-Mees, M. A. and Short, J. M., *Nucleic Acids Res.* 17:9494 (1989)) and pBK (Altting-Mees, M. A. et al., *Strategies* 5:58-61 (1992)) are commercially available from Stratagene Cloning Systems, Inc., 11011 N. Torrey Pines Road, La Jolla, CA, 92037. pBS contains an ampicillin resistance gene and pBK contains a neomycin resistance gene. Phagemid pBS may be excised from the Lambda Zap and Uni-Zap XR vectors, and phagemid pBK may be excised from the Zap Express vector. Both phagemids may be transformed into *E. coli* strain XL-1 Blue, also available from Stratagene

Vectors pSport1, pCMVSPORT 1.0, pCMVSPORT 2.0 and pCMVSPORT 3.0, were obtained from Life Technologies, Inc., P. O. Box 6009, Gaithersburg, MD 20897. All Sport vectors contain an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, also available from Life Technologies. See, for instance, Gruber, C. E., et al., *Focus* 15:59 (1993). Vector lafmid BA (Bento Soares, Columbia University, New York, NY) contains an ampicillin resistance gene and can be transformed into *E. coli* strain XL-1 Blue. Vector pCR[®]2.1, which is available from Invitrogen, 1600 Faraday Avenue, Carlsbad, CA 92008, contains an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, available from Life Technologies. See, for instance, Clark, J. M., *Nuc. Acids Res.* 16:9677-9686 (1988) and Mead, D. et al., *Bio/Technology* 9: (1991).

The present invention also relates to the genes corresponding to SEQ ID NO:X, SEQ ID NO:Y, and/or a deposited cDNA (cDNA Clone ID). The corresponding gene can be isolated in

accordance with known methods using the sequence information disclosed herein. Such methods include, but are not limited to, preparing probes or primers from the disclosed sequence and identifying or amplifying the corresponding gene from appropriate sources of genomic material.

Also provided in the present invention are allelic variants, orthologs, and/or species homologs. Procedures known in the art can be used to obtain full-length genes, allelic variants, splice variants, full-length coding portions, orthologs, and/or species homologs of genes corresponding to SEQ ID NO:X and SEQ ID NO:Y using information from the sequences disclosed herein or the clones deposited with the ATCC. For example, allelic variants and/or species homologs may be isolated and identified by making suitable probes or primers from the sequences provided herein and screening a suitable nucleic acid source for allelic variants and/or the desired homologue.

The present invention provides a polynucleotide comprising, or alternatively consisting of, the nucleic acid sequence of SEQ ID NO:X and/or a cDNA contained in ATCC Deposit No.Z. The present invention also provides a polypeptide comprising, or alternatively, consisting of, the polypeptide sequence of SEQ ID NO:Y, a polypeptide encoded by SEQ ID NO:X, and/or a polypeptide encoded by a cDNA contained in ATCC deposit No.Z. Polynucleotides encoding a polypeptide comprising, or alternatively consisting of the polypeptide sequence of SEQ ID NO:Y, a polypeptide encoded by SEQ ID NO:X and/or a polypeptide encoded by the cDNA contained in ATCC Deposit No.Z, are also encompassed by the invention. The present invention further encompasses a polynucleotide comprising, or alternatively consisting of the complement of the nucleic acid sequence of SEQ ID NO:X, and/or the complement of the coding strand of the cDNA contained in ATCC Deposit No.Z.

Description of Table 1B (Comprised of Tables 1B.1 and 1B.2)

Table 1B.1 and Table 1B.2 summarize some of the polynucleotides encompassed by the invention (including cDNA clones related to the sequences (Clone ID:), contig sequences (contig identifier (Contig ID:)) and contig nucleotide sequence identifiers (SEQ ID NO:X)) and further summarizes certain characteristics of these polynucleotides and the polypeptides encoded thereby. The first column of Tables 1B.1 and 1B.2 provide the gene numbers in the application for each clone identifier. The second column of Tables 1B.1 and 1B.2 provide unique clone identifiers, "Clone ID:", for cDNA clones related to each contig sequence disclosed in Table 1A and/or Table 1B. The third column of Tables 1B.1 and 1B.2 provide unique contig identifiers, "Contig ID:" for each of the contig sequences disclosed in these tables. The fourth column of Tables 1B.1 and 1B.2 provide the sequence identifiers, "SEQ ID NO:X", for each of the contig sequences disclosed in Table 1A and/or 1B.

Table 1B.1

The fifth column of Table 1B.1, "ORF (From-To)", provides the location (i.e., nucleotide position numbers) within the polynucleotide sequence of SEQ ID NO:X that delineates the preferred open reading frame (ORF) that encodes the amino acid sequence shown in the sequence listing and referenced in Table 1B.1 as SEQ ID NO:Y (column 6). Column 7 of Table 1B.1 lists residues comprising predicted epitopes contained in the polypeptides encoded by each of the preferred ORFs (SEQ ID NO:Y). Identification of potential immunogenic regions was performed according to the method of Jameson and Wolf (CABIOS, 4; 181-186 (1988)); specifically, the Genetics Computer Group (GCG) implementation of this algorithm, embodied in the program PEPTIDESTRUCTURE (Wisconsin Package v10.0, Genetics Computer Group (GCG), Madison, Wisc.). This method returns a measure of the probability that a given residue is found on the surface of the protein. Regions where the antigenic index score is greater than 0.9 over at least 6 amino acids are indicated in Table 1B.1 as "Predicted Epitopes". In particular embodiments, polypeptides of the invention comprise, or alternatively consist of, one, two, three, four, five or more of the predicted epitopes described in Table 1B.1. It will be appreciated that depending on the analytical criteria used to predict antigenic determinants, the exact address of the determinant may vary slightly. Column 8 of Table 1B.1 ("Cytologic Band") provides the chromosomal location of polynucleotides corresponding to SEQ ID NO:X. Chromosomal location was determined by finding exact matches to EST and cDNA sequences contained in the NCBI (National Center for Biotechnology Information) UniGene database. Given a presumptive chromosomal location, disease locus association was determined by comparison with the Morbid Map, derived from Online Mendelian Inheritance in Man (Online Mendelian Inheritance in Man, OMIM™. McKusick-Nathans Institute for Genetic Medicine, Johns Hopkins University (Baltimore, MD) and National Center for Biotechnology Information, National Library of Medicine (Bethesda, MD) 2000. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>). If the putative chromosomal location of the Query overlaps with the chromosomal location of a Morbid Map entry, an OMIM identification number is disclosed in Table 1B.1, column 9 labeled "OMIM Disease Reference(s)". A key to the OMIM reference identification numbers is provided in Table 5.

Table 1B.2

Column 5 of Table 1B.2, "Tissue Distribution" shows the expression profile of tissue, cells, and/or cell line libraries which express the polynucleotides of the invention. The first code number shown in Table 1B.2 column 5 (preceding the colon), represents the tissue/cell source identifier code corresponding to the key provided in Table 4. Expression of these polynucleotides was not observed in the other tissues and/or cell libraries tested. The second number in column 5 (following the colon), represents the number of times a sequence corresponding to the reference polynucleotide sequence (e.g., SEQ ID NO:X) was identified in the corresponding tissue/cell source. Those tissue/cell source identifier codes in which the first two letters are "AR" designate

information generated using DNA array technology. Utilizing this technology, cDNAs were amplified by PCR and then transferred, in duplicate, onto the array. Gene expression was assayed through hybridization of first strand cDNA probes to the DNA array. cDNA probes were generated from total RNA extracted from a variety of different tissues and cell lines. Probe synthesis was performed in the presence of ^{33}P dCTP, using oligo(dT) to prime reverse transcription. After hybridization, high stringency washing conditions were employed to remove non-specific hybrids from the array. The remaining signal, emanating from each gene target, was measured using a Phosphorimager. Gene expression was reported as Phosphor Stimulating Luminescence (PSL) which reflects the level of phosphor signal generated from the probe hybridized to each of the gene targets represented on the array. A local background signal subtraction was performed before the total signal generated from each array was used to normalize gene expression between the different hybridizations. The value presented after "[array code]:" represents the mean of the duplicate values, following background subtraction and probe normalization. One of skill in the art could routinely use this information to identify normal and/or diseased tissue(s) which show a predominant expression pattern of the corresponding polynucleotide of the invention or to identify polynucleotides which show predominant and/or specific tissue and/or cell expression.

Description of Table 1C

Table 1C summarizes additional polynucleotides encompassed by the invention (including cDNA clones related to the sequences (Clone ID:), contig sequences (contig identifier (Contig ID:) contig nucleotide sequence identifiers (SEQ ID NO:X)), and genomic sequences (SEQ ID NO:B). The first column provides a unique clone identifier, "Clone ID:", for a cDNA clone related to each contig sequence. The second column provides the sequence identifier, "SEQ ID NO:X", for each contig sequence. The third column provides a unique contig identifier, "Contig ID:" for each contig sequence. The fourth column, provides a BAC identifier "BAC ID NO:A" for the BAC clone referenced in the corresponding row of the table. The fifth column provides the nucleotide sequence identifier, "SEQ ID NO:B" for a fragment of the BAC clone identified in column four of the corresponding row of the table. The sixth column, "Exon From-To", provides the location (i.e., nucleotide position numbers) within the polynucleotide sequence of SEQ ID NO:B which delineate certain polynucleotides of the invention that are also exemplary members of polynucleotide sequences that encode polypeptides of the invention (e.g., polypeptides containing amino acid sequences encoded by the polynucleotide sequences delineated in column six, and fragments and variants thereof).

Description of Table 1D

Table 1D: In preferred embodiments, the present invention encompasses a method of detecting, preventing, diagnosing, prognosticating, treating, and/or ameliorating gastrointestinal

diseases or disorders; comprising administering to a patient in which such treatment, prevention, or amelioration is desired a protein, nucleic acid, or antibody of the invention (or fragment or variant thereof) represented by Table 1A, Table 1B, and Table 1C, in an amount effective to detect, prevent, diagnose, prognosticate, treat, and/or ameliorate the disease or disorder.

5 As indicated in Table 1D, the polynucleotides, polypeptides, agonists, or antagonists of the present invention (including antibodies) can be used in assays to test for one or more biological activities. If these polynucleotides and polypeptides do exhibit activity in a particular assay, it is likely that these molecules may be involved in the diseases associated with the biological activity. Thus, the polynucleotides or polypeptides, or agonists or antagonists thereof (including antibodies)
10 could be used to treat the associated disease.

Table 1D provides information related to biological activities for polynucleotides and polypeptides of the invention (including antibodies, agonists, and/or antagonists thereof). Table 1D also provides information related to assays which may be used to test polynucleotides and polypeptides of the invention (including antibodies, agonists, and/or antagonists thereof) for the
15 corresponding biological activities. The first column ("Gene No.") provides the gene number in the application for each clone identifier. The second column ("cDNA Clone ID:") provides the unique clone identifier for each clone as previously described and indicated in Tables 1A, 1B, and 1C. The third column ("AA SEQ ID NO:Y") indicates the Sequence Listing SEQ ID Number for polypeptide sequences encoded by the corresponding cDNA clones (also as indicated in Tables
20 1A, 1B, and 2). The fourth column ("Biological Activity") indicates a biological activity corresponding to the indicated polypeptides (or polynucleotides encoding said polypeptides). The fifth column ("Exemplary Activity Assay") further describes the corresponding biological activity and provides information pertaining to the various types of assays which may be performed to test, demonstrate, or quantify the corresponding biological activity. Table 1D describes the use of
25 FMAT technology, *inter alia*, for testing or demonstrating various biological activities. Fluorometric microvolume assay technology (FMAT) is a fluorescence-based system which provides a means to perform nonradioactive cell- and bead-based assays to detect activation of cell signal transduction pathways. This technology was designed specifically for ligand binding and immunological assays. Using this technology, fluorescent cells or beads at the bottom of the well
30 are detected as localized areas of concentrated fluorescence using a data processing system. Unbound fluorephore comprising the background signal is ignored, allowing for a wide variety of homogeneous assays. FMAT technology may be used for peptide ligand binding assays, immunofluorescence, apoptosis, cytotoxicity, and bead-based immunocapture assays. *See*, Miraglia S et. al., "Homogeneous cell and bead based assays for highthroughput screening using
35 flourometric microvolume assay technology," Journal of Biomolecular Screening; 4:193-204 (1999). In particular, FMAT technology may be used to test, confirm, and/or identify the ability of polypeptides (including polypeptide fragments and variants) to activate signal transduction

pathways. For example, FMAT technology may be used to test, confirm, and/or identify the ability of polypeptides to upregulate production of immunomodulatory proteins (such as, for example, interleukins, GM-CSF, Rantes, and Tumor Necrosis factors, as well as other cellular regulators (e.g. insulin)).

5 Table 1D also describes the use of kinase assays for testing, demonstrating, or quantifying biological activity. In this regard, the phosphorylation and de-phosphorylation of specific amino acid residues (e.g. Tyrosine, Serine, Threonine) on cell-signal transduction proteins provides a fast, reversible means for activation and de-activation of cellular signal transduction pathways. Moreover, cell signal transduction via phosphorylation/de-phosphorylation is crucial to the
10 regulation of a wide variety of cellular processes (e.g. proliferation, differentiation, migration, apoptosis, etc.). Accordingly, kinase assays provide a powerful tool useful for testing, confirming, and/or identifying polypeptides (including polypeptide fragments and variants) that mediate cell signal transduction events via protein phosphorylation. See e.g., Forrer, P., Tamaskovic R., and Jaussi, R. "Enzyme-Linked Immunosorbent Assay for Measurement of JNK, ERK, and p38 Kinase
15 Activities" Biol. Chem. 379(8-9): 1101-1110 (1998).

Description of Table 2

Table 2 summarizes homology and features of some of the polypeptides of the invention. The first column provides a unique clone identifier, "Clone ID:", corresponding to a cDNA clone
20 disclosed in Table 1A or Table 1B. The second column provides the unique contig identifier, "Contig ID:" corresponding to contigs in Table 1B and allowing for correlation with the information in Table 1B. The third column provides the sequence identifier, "SEQ ID NO:X", for the contig polynucleotide sequence. The fourth column provides the analysis method by which the homology/identity disclosed in the Table was determined. Comparisons were made between
25 polypeptides encoded by the polynucleotides of the invention and either a non-redundant protein database (herein referred to as "NR"), or a database of protein families (herein referred to as "PFAM") as further described below. The fifth column provides a description of the PFAM/NR hit having a significant match to a polypeptide of the invention. Column six provides the accession number of the PFAM/NR hit disclosed in the fifth column. Column seven,
30 "Score/Percent Identity", provides a quality score or the percent identity, of the hit disclosed in columns five and six. Columns 8 and 9, "NT From" and "NT To" respectively, delineate the polynucleotides in "SEQ ID NO:X" that encode a polypeptide having a significant match to the PFAM/NR database as disclosed in the fifth and sixth columns. In specific embodiments polypeptides of the invention comprise, or alternatively consist of, an amino acid sequence
35 encoded by a polynucleotide in SEQ ID NO:X as delineated in columns 8 and 9, or fragments or variants thereof.

Description of Table 3

Table 3 provides polynucleotide sequences that may be disclaimed according to certain embodiments of the invention. The first column provides a unique clone identifier, "Clone ID", for a cDNA clone related to contig sequences disclosed in Table 1B. The second column provides the sequence identifier, "SEQ ID NO:X", for contig sequences disclosed in Table 1A and/or Table 1B. The third column provides the unique contig identifier, "Contig ID:", for contigs disclosed in Table 1B. The fourth column provides a unique integer 'a' where 'a' is any integer between 1 and the final nucleotide minus 15 of SEQ ID NO:X, and the fifth column provides a unique integer 'b' where 'b' is any integer between 15 and the final nucleotide of SEQ ID NO:X, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:X, and where b is greater than or equal to a + 14. For each of the polynucleotides shown as SEQ ID NO:X, the uniquely defined integers can be substituted into the general formula of a-b, and used to describe polynucleotides which may be preferably excluded from the invention. In certain embodiments, preferably excluded from the invention are at least one, two, three, four, five, ten, or more of the polynucleotide sequence(s) having the accession number(s) disclosed in the sixth column of this Table (including for example, published sequence in connection with a particular BAC clone). In further embodiments, preferably excluded from the invention are the specific polynucleotide sequence(s) contained in the clones corresponding to at least one, two, three, four, five, ten, or more of the available material having the accession numbers identified in the sixth column of this Table (including for example, the actual sequence contained in an identified BAC clone).

Description of Table 4

Table 4 provides a key to the tissue/cell source identifier code disclosed in Table 1B.2, column 5. Column 1 of Table 4 provides the tissue/cell source identifier code disclosed in Table 1B.2, Column 5. Columns 2-5 provide a description of the tissue or cell source. Note that "Description" and "Tissue" sources (i.e. columns 2 and 3) having the prefix "a_" indicates organs, tissues, or cells derived from "adult" sources. Codes corresponding to diseased tissues are indicated in column 6 with the word "disease." The use of the word "disease" in column 6 is non-limiting. The tissue or cell source may be specific (e.g. a neoplasm), or may be disease-associated (e.g., a tissue sample from a normal portion of a diseased organ). Furthermore, tissues and/or cells lacking the "disease" designation may still be derived from sources directly or indirectly involved in a disease state or disorder, and therefore may have a further utility in that disease state or disorder. In numerous cases where the tissue/cell source is a library, column 7 identifies the vector used to generate the library.

Description of Table 5

Table 5 provides a key to the OMIM reference identification numbers disclosed in Table

1B.1, column 9. OMIM reference identification numbers (Column 1) were derived from Online Mendelian Inheritance in Man (Online Mendelian Inheritance in Man, OMIM. McKusick-Nathans Institute for Genetic Medicine, Johns Hopkins University (Baltimore, MD) and National Center for Biotechnology Information, National Library of Medicine, (Bethesda, MD) 2000. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>). Column 2 provides diseases associated with the cytologic band disclosed in Table 1B.1, column 8, as determined using the Morbid Map database.

Description of Table 6

Table 6 summarizes some of the ATCC Deposits, Deposit dates, and ATCC designation numbers of deposits made with the ATCC in connection with the present application. These deposits were made in addition to those described in the Table 1A.

Description of Table 7

Table 7 shows the cDNA libraries sequenced, and ATCC designation numbers and vector information relating to these cDNA libraries.

The first column shows the first four letters indicating the Library from which each library clone was derived. The second column indicates the catalogued tissue description for the corresponding libraries. The third column indicates the vector containing the corresponding clones. The fourth column shows the ATCC deposit designation for each library clone as indicated by the deposit information in Table 6.

Definitions

The following definitions are provided to facilitate understanding of certain terms used throughout this specification.

In the present invention, "isolated" refers to material removed from its original environment (e.g., the natural environment if it is naturally occurring), and thus is altered "by the hand of man" from its natural state. For example, an isolated polynucleotide could be part of a vector or a composition of matter, or could be contained within a cell, and still be "isolated" because that vector, composition of matter, or particular cell is not the original environment of the polynucleotide. The term "isolated" does not refer to genomic or cDNA libraries, whole cell total or mRNA preparations, genomic DNA preparations (including those separated by electrophoresis and transferred onto blots), sheared whole cell genomic DNA preparations or other compositions where the art demonstrates no distinguishing features of the polynucleotide/sequences of the present invention.

In the present invention, a "secreted" protein refers to those proteins capable of being directed to the ER, secretory vesicles, or the extracellular space as a result of a signal sequence, as

well as those proteins released into the extracellular space without necessarily containing a signal sequence. If the secreted protein is released into the extracellular space, the secreted protein can undergo extracellular processing to produce a "mature" protein. Release into the extracellular space can occur by many mechanisms, including exocytosis and proteolytic cleavage.

5 As used herein, a "polynucleotide" refers to a molecule having a nucleic acid sequence encoding SEQ ID NO:Y or a fragment or variant thereof (e.g., the polypeptide delineated in columns fourteen and fifteen of Table 1A); a nucleic acid sequence contained in SEQ ID NO:X (as described in column 5 of Table 1A and/or column 3 of Table 1B) or the complement thereof; a cDNA sequence contained in Clone ID: (as described in column 2 of Table 1A and/or Table 1B
10 and contained within a library deposited with the ATCC); a nucleotide sequence encoding the polypeptide encoded by a nucleotide sequence in SEQ ID NO:B as defined in column 6 (EXON From-To) of Table 1C or a fragment or variant thereof; or a nucleotide coding sequence in SEQ ID NO:B as defined in column 6 of Table 1C or the complement thereof. For example, the polynucleotide can contain the nucleotide sequence of the full length cDNA sequence, including
15 the 5' and 3' untranslated sequences, the coding region, as well as fragments, epitopes, domains, and variants of the nucleic acid sequence. Moreover, as used herein, a "polypeptide" refers to a molecule having an amino acid sequence encoded by a polynucleotide of the invention as broadly defined (obviously excluding poly-Phenylalanine or poly-Lysine peptide sequences which result from translation of a polyA tail of a sequence corresponding to a cDNA).

20 In the present invention, "SEQ ID NO:X" was often generated by overlapping sequences contained in multiple clones (contig analysis). A representative clone containing all or most of the sequence for SEQ ID NO:X is deposited at Human Genome Sciences, Inc. (HGS) in a catalogued and archived library. As shown, for example, in column 2 of Table 1B, each clone is identified by a cDNA Clone ID (identifier generally referred to herein as Clone ID:). Each Clone ID is unique to
25 an individual clone and the Clone ID is all the information needed to retrieve a given clone from the HGS library. Table 7 provides a list of the deposited cDNA libraries. One can use the Clone ID: to determine the library source by reference to Tables 6 and 7. Table 7 lists the deposited cDNA libraries by name and links each library to an ATCC Deposit. Library names contain four characters, for example, "HTWE." The name of a cDNA clone (Clone ID) isolated from that
30 library begins with the same four characters, for example "HTWEP07". As mentioned below, Table 1A and/or Table 1B correlates the Clone ID names with SEQ ID NO:X. Thus, starting with an SEQ ID NO:X, one can use Tables 1A, 1B, 6, 7, and 9 to determine the corresponding Clone ID, which library it came from and which ATCC deposit the library is contained in. Furthermore, it is possible to retrieve a given cDNA clone from the source library by techniques known in the
35 art and described elsewhere herein. The ATCC is located at 10801 University Boulevard, Manassas, Virginia 20110-2209, USA. The ATCC deposits were made pursuant to the terms of the

Budapest Treaty on the international recognition of the deposit of microorganisms for the purposes of patent procedure.

In specific embodiments, the polynucleotides of the invention are at least 15, at least 30, at least 50, at least 100, at least 125, at least 500, or at least 1000 continuous nucleotides but are less than or equal to 300 kb, 200 kb, 100 kb, 50 kb, 15 kb, 10 kb, 7.5kb, 5 kb, 2.5 kb, 2.0 kb, or 1 kb, in length. In a further embodiment, polynucleotides of the invention comprise a portion of the coding sequences, as disclosed herein, but do not comprise all or a portion of any intron. In another embodiment, the polynucleotides comprising coding sequences do not contain coding sequences of a genomic flanking gene (i.e., 5' or 3' to the gene of interest in the genome). In other
5
10
embodiments, the polynucleotides of the invention do not contain the coding sequence of more than 1000, 500, 250, 100, 50, 25, 20, 15, 10, 5, 4, 3, 2, or 1 genomic flanking gene(s).

A "polynucleotide" of the present invention also includes those polynucleotides capable of hybridizing, under stringent hybridization conditions, to sequences contained in SEQ ID NO:X, or the complement thereof (e.g., the complement of any one, two, three, four, or more of the polynucleotide fragments described herein), the polynucleotide sequence delineated in columns 7 and 8 of Table 1A or the complement thereof, the polynucleotide sequence delineated in columns 8 and 9 of Table 2 or the complement thereof, and/or cDNA sequences contained in Clone ID: (e.g., the complement of any one, two, three, four, or more of the polynucleotide fragments, or the cDNA clone within the pool of cDNA clones deposited with the ATCC, described herein), and/or
15
20
the polynucleotide sequence delineated in column 6 of Table 1C or the complement thereof. "Stringent hybridization conditions" refers to an overnight incubation at 42 degree C in a solution comprising 50% formamide, 5x SSC (750 mM NaCl, 75 mM trisodium citrate), 50 mM sodium phosphate (pH 7.6), 5x Denhardt's solution, 10% dextran sulfate, and 20 µg/ml denatured, sheared salmon sperm DNA, followed by washing the filters in 0.1x SSC at about 65 degree C.

Also contemplated are nucleic acid molecules that hybridize to the polynucleotides of the present invention at lower stringency hybridization conditions. Changes in the stringency of hybridization and signal detection are primarily accomplished through the manipulation of formamide concentration (lower percentages of formamide result in lowered stringency); salt conditions, or temperature. For example, lower stringency conditions include an overnight
25
30
incubation at 37 degree C in a solution comprising 6X SSPE (20X SSPE = 3M NaCl; 0.2M NaH₂PO₄; 0.02M EDTA, pH 7.4), 0.5% SDS, 30% formamide, 100 µg/ml salmon sperm blocking DNA; followed by washes at 50 degree C with 1XSSPE, 0.1% SDS. In addition, to achieve even lower stringency, washes performed following stringent hybridization can be done at higher salt concentrations (e.g. 5X SSC).

Note that variations in the above conditions may be accomplished through the inclusion and/or substitution of alternate blocking reagents used to suppress background in hybridization experiments. Typical blocking reagents include Denhardt's reagent, BLOTTO, heparin, denatured
35

salmon sperm DNA, and commercially available proprietary formulations. The inclusion of specific blocking reagents may require modification of the hybridization conditions described above, due to problems with compatibility.

Of course, a polynucleotide which hybridizes only to polyA+ sequences (such as any 3' terminal polyA+ tract of a cDNA shown in the sequence listing), or to a complementary stretch of T (or U) residues, would not be included in the definition of "polynucleotide," since such a polynucleotide would hybridize to any nucleic acid molecule containing a poly (A) stretch or the complement thereof (e.g., practically any double-stranded cDNA clone generated using oligo dT as a primer).

The polynucleotide of the present invention can be composed of any polyribonucleotide or polydeoxribonucleotide, which may be unmodified RNA or DNA or modified RNA or DNA. For example, polynucleotides can be composed of single- and double-stranded DNA, DNA that is a mixture of single- and double-stranded regions, single- and double-stranded RNA, and RNA that is mixture of single- and double-stranded regions, hybrid molecules comprising DNA and RNA that may be single-stranded or, more typically, double-stranded or a mixture of single- and double-stranded regions. In addition, the polynucleotide can be composed of triple-stranded regions comprising RNA or DNA or both RNA and DNA. A polynucleotide may also contain one or more modified bases or DNA or RNA backbones modified for stability or for other reasons. "Modified" bases include, for example, tritylated bases and unusual bases such as inosine. A variety of modifications can be made to DNA and RNA; thus, "polynucleotide" embraces chemically, enzymatically, or metabolically modified forms.

In specific embodiments, the polynucleotides of the invention are at least 15, at least 30, at least 50, at least 100, at least 125, at least 500, or at least 1000 continuous nucleotides but are less than or equal to 300 kb, 200 kb, 100 kb, 50 kb, 15 kb, 10 kb, 7.5kb, 5 kb, 2.5 kb, 2.0 kb, or 1 kb, in length. In a further embodiment, polynucleotides of the invention comprise a portion of the coding sequences, as disclosed herein, but do not comprise all or a portion of any intron. In another embodiment, the polynucleotides comprising coding sequences do not contain coding sequences of a genomic flanking gene (i.e., 5' or 3' to the gene of interest in the genome). In other embodiments, the polynucleotides of the invention do not contain the coding sequence of more than 1000, 500, 250, 100, 50, 25, 20, 15, 10, 5, 4, 3, 2, or 1 genomic flanking gene(s).

"SEQ ID NO:X" refers to a polynucleotide sequence described in column 5 of Table 1A, while "SEQ ID NO:Y" refers to a polypeptide sequence described in column 10 of Table 1A. SEQ ID NO:X is identified by an integer specified in column 6 of Table 1A. The polypeptide sequence SEQ ID NO:Y is a translated open reading frame (ORF) encoded by polynucleotide SEQ ID NO:X. The polynucleotide sequences are shown in the sequence listing immediately followed by all of the polypeptide sequences. Thus, a polypeptide sequence corresponding to polynucleotide sequence SEQ ID NO:2 is the first polypeptide sequence shown in the sequence listing. The

second polypeptide sequence corresponds to the polynucleotide sequence shown as SEQ ID NO:3, and so on.

The polypeptide of the present invention can be composed of amino acids joined to each other by peptide bonds or modified peptide bonds, i.e., peptide isosteres, and may contain amino acids other than the 20 gene-encoded amino acids. The polypeptides may be modified by either natural processes, such as posttranslational processing, or by chemical modification techniques which are well known in the art. Such modifications are well described in basic texts and in more detailed monographs, as well as in a voluminous research literature. Modifications can occur anywhere in a polypeptide, including the peptide backbone, the amino acid side-chains and the amino or carboxyl termini. It will be appreciated that the same type of modification may be present in the same or varying degrees at several sites in a given polypeptide. Also, a given polypeptide may contain many types of modifications. Polypeptides may be branched, for example, as a result of ubiquitination, and they may be cyclic, with or without branching. Cyclic, branched, and branched cyclic polypeptides may result from posttranslation natural processes or may be made by synthetic methods. Modifications include acetylation, acylation, ADP-ribosylation, amidation, covalent attachment of flavin, covalent attachment of a heme moiety, covalent attachment of a nucleotide or nucleotide derivative, covalent attachment of a lipid or lipid derivative, covalent attachment of phosphatidylinositol, cross-linking, cyclization, disulfide bond formation, demethylation, formation of covalent cross-links, formation of cysteine, formation of pyroglutamate, formylation, gamma-carboxylation, glycosylation, GPI anchor formation, hydroxylation, iodination, methylation, myristoylation, oxidation, pegylation, proteolytic processing, phosphorylation, prenylation, racemization, selenoylation, sulfation, transfer-RNA mediated addition of amino acids to proteins such as arginylation, and ubiquitination. (See, for instance, PROTEINS - STRUCTURE AND MOLECULAR PROPERTIES, 2nd Ed., T. E. Creighton, W. H. Freeman and Company, New York (1993); POSTTRANSLATIONAL COVALENT MODIFICATION OF PROTEINS, B. C. Johnson, Ed., Academic Press, New York, pgs. 1-12 (1983); Seifter et al., Meth. Enzymol. 182:626-646 (1990); Rattan et al., Ann. N.Y. Acad. Sci. 663:48-62 (1992)).

"SEQ ID NO:X" refers to a polynucleotide sequence described, for example, in Tables 1A, Table 1B, or Table 2, while "SEQ ID NO:Y" refers to a polypeptide sequence described in column 11 of Table 1A and or column 6 of Table 1B.1. SEQ ID NO:X is identified by an integer specified in column 4 of Table 1B. The polypeptide sequence SEQ ID NO:Y is a translated open reading frame (ORF) encoded by polynucleotide SEQ ID NO:X. "Clone ID:" refers to a cDNA clone described in column 2 of Table 1A and/or 1B.

"A polypeptide having functional activity" refers to a polypeptide capable of displaying one or more known functional activities associated with a full-length (complete) protein. Such functional activities include, but are not limited to, biological activity (e.g. activity useful in

treating, preventing and/or ameliorating gastrointestinal diseases and disorders), antigenicity (ability to bind [or compete with a polypeptide for binding] to an anti-polypeptide antibody), immunogenicity (ability to generate antibody which binds to a specific polypeptide of the invention), ability to form multimers with polypeptides of the invention, and ability to bind to a receptor or ligand for a polypeptide.

The polypeptides of the invention can be assayed for functional activity (e.g. biological activity) using or routinely modifying assays known in the art, as well as assays described herein. Specifically, one of skill in the art may routinely assay secreted polypeptides (including fragments and variants) of the invention for activity using assays as described in the examples section below.

"A polypeptide having biological activity" refers to a polypeptide exhibiting activity similar to, but not necessarily identical to, an activity of a polypeptide of the present invention, including mature forms, as measured in a particular biological assay, with or without dose dependency. In the case where dose dependency does exist, it need not be identical to that of the polypeptide, but rather substantially similar to the dose-dependence in a given activity as compared to the polypeptide of the present invention (i.e., the candidate polypeptide will exhibit greater activity or not more than about 25-fold less and, preferably, not more than about tenfold less activity, and most preferably, not more than about three-fold less activity relative to the polypeptide of the present invention).

TABLES:

Table 1A

Table 1A summarizes information concerning certain polynucleotides and polypeptides of the invention. The first column provides the gene number in the application for each clone identifier. The second column provides a unique clone identifier, "Clone ID:", for a cDNA clone related to each contig sequence disclosed in Table 1A. Third column, the cDNA Clones identified in the second column were deposited as indicated in the third column (i.e. by ATCC Deposit No:Z and deposit date). Some of the deposits contain multiple different clones corresponding to the same gene. In the fourth column, "Vector" refers to the type of vector contained in the corresponding cDNA Clone identified in the second column. In the fifth column, the nucleotide sequence identified as "NT SEQ ID NO:X" was assembled from partially homologous ("overlapping") sequences obtained from the corresponding cDNA clone identified in the second column and, in some cases, from additional related cDNA clones. The overlapping sequences were assembled into a single contiguous sequence of high redundancy (usually three to five overlapping sequences at each nucleotide position), resulting in a final sequence identified as SEQ ID NO:X. In the sixth column, "Total NT Seq." refers to the total number of nucleotides in the contig sequence identified as SEQ ID NO:X." The deposited clone may contain all or most of these sequences, reflected by the nucleotide position indicated as "5' NT of Clone Seq." (seventh

column) and the "3' NT of Clone Seq." (eighth column) of SEQ ID NO:X. In the ninth column, the nucleotide position of SEQ ID NO:X of the putative start codon (methionine) is identified as "5' NT of Start Codon." Similarly, in column ten, the nucleotide position of SEQ ID NO:X of the predicted signal sequence is identified as "5' NT of First AA of Signal Pep." In the eleventh column, the translated amino acid sequence, beginning with the methionine, is identified as "AA SEQ ID NO:Y," although other reading frames can also be routinely translated using known molecular biology techniques. The polypeptides produced by these alternative open reading frames are specifically contemplated by the present invention.

In the twelfth and thirteenth columns of Table 1A, the first and last amino acid position of SEQ ID NO:Y of the predicted signal peptide is identified as "First AA of Sig Pep" and "Last AA of Sig Pep." In the fourteenth column, the predicted first amino acid position of SEQ ID NO:Y of the secreted portion is identified as "Predicted First AA of Secreted Portion". The amino acid position of SEQ ID NO:Y of the last amino acid encoded by the open reading frame is identified in the fifteenth column as "Last AA of ORF".

SEQ ID NO:X (where X may be any of the polynucleotide sequences disclosed in the sequence listing) and the translated SEQ ID NO:Y (where Y may be any of the polypeptide sequences disclosed in the sequence listing) are sufficiently accurate and otherwise suitable for a variety of uses well known in the art and described further below. For instance, SEQ ID NO:X is useful for designing nucleic acid hybridization probes that will detect nucleic acid sequences contained in SEQ ID NO:X or the cDNA contained in the deposited clone. These probes will also hybridize to nucleic acid molecules in biological samples, thereby enabling a variety of forensic and diagnostic methods of the invention. Similarly, polypeptides identified from SEQ ID NO:Y may be used, for example, to generate antibodies which bind specifically to proteins containing the polypeptides and the secreted proteins encoded by the cDNA clones identified in Table 1A and/or elsewhere herein

Nevertheless, DNA sequences generated by sequencing reactions can contain sequencing errors. The errors exist as misidentified nucleotides, or as insertions or deletions of nucleotides in the generated DNA sequence. The erroneously inserted or deleted nucleotides cause frame shifts in the reading frames of the predicted amino acid sequence. In these cases, the predicted amino acid sequence diverges from the actual amino acid sequence, even though the generated DNA sequence may be greater than 99.9% identical to the actual DNA sequence (for example, one base insertion or deletion in an open reading frame of over 1000 bases).

Accordingly, for those applications requiring precision in the nucleotide sequence or the amino acid sequence, the present invention provides not only the generated nucleotide sequence identified as SEQ ID NO:X, and the predicted translated amino acid sequence identified as SEQ ID NO:Y, but also a sample of plasmid DNA containing a human cDNA of the invention deposited with the ATCC, as set forth in Table 1A. The nucleotide sequence of each deposited

plasmid can readily be determined by sequencing the deposited plasmid in accordance with known methods

The predicted amino acid sequence can then be verified from such deposits. Moreover, the amino acid sequence of the protein encoded by a particular plasmid can also be directly
5 determined by peptide sequencing or by expressing the protein in a suitable host cell containing the deposited human cDNA, collecting the protein, and determining its sequence.

Also provided in Table 1A is the name of the vector which contains the cDNA plasmid. Each vector is routinely used in the art. The following additional information is provided for convenience.

10 Vectors Lambda Zap (U.S. Patent Nos. 5,128,256 and 5,286,636), Uni-Zap XR (U.S. Patent Nos. 5,128, 256 and 5,286,636), Zap Express (U.S. Patent Nos. 5,128,256 and 5,286,636), pBluescript (pBS) (Short, J. M. et al., *Nucleic Acids Res.* 16:7583-7600 (1988); Altling-Mees, M. A. and Short, J. M., *Nucleic Acids Res.* 17:9494 (1989)) and pBK (Altling-Mees, M. A. et al., *Strategies* 5:58-61 (1992)) are commercially available from Stratagene Cloning Systems, Inc.,
15 11011 N. Torrey Pines Road, La Jolla, CA, 92037. pBS contains an ampicillin resistance gene and pBK contains a neomycin resistance gene. Phagemid pBS may be excised from the Lambda Zap and Uni-Zap XR vectors, and phagemid pBK may be excised from the Zap Express vector. Both phagemids may be transformed into *E. coli* strain XL-1 Blue, also available from Stratagene

Vectors pSport1, pCMVSPORT 1.0, pCMVSPORT 2.0 and pCMVSPORT 3.0, were obtained
20 from Life Technologies, Inc., P. O. Box 6009, Gaithersburg, MD 20897. All Sport vectors contain an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, also available from Life Technologies. See, for instance, Gruber, C. E., et al., *Focus* 15:59 (1993). Vector lacmid BA (Bento Soares, Columbia University, New York, NY) contains an ampicillin resistance gene and can be transformed into *E. coli* strain XL-1 Blue. Vector pCR[®]2.1, which is available
25 from Invitrogen, 1600 Faraday Avenue, Carlsbad, CA 92008, contains an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, available from Life Technologies. See, for instance, Clark, J. M., *Nuc. Acids Res.* 16:9677-9686 (1988) and Mead, D. et al., *Bio/Technology* 9: (1991).

The present invention also relates to the genes corresponding to SEQ ID NO:X, SEQ ID
30 NO:Y, and/or a deposited cDNA (cDNA Clone ID). The corresponding gene can be isolated in accordance with known methods using the sequence information disclosed herein. Such methods include, but are not limited to, preparing probes or primers from the disclosed sequence and identifying or amplifying the corresponding gene from appropriate sources of genomic material.

Also provided in the present invention are allelic variants, orthologs, and/or species
35 homologs. Procedures known in the art can be used to obtain full-length genes, allelic variants, splice variants, full-length coding portions, orthologs, and/or species homologs of genes corresponding to SEQ ID NO:X and SEQ ID NO:Y using information from the sequences

disclosed herein or the clones deposited with the ATCC. For example, allelic variants and/or species homologs may be isolated and identified by making suitable probes or primers from the sequences provided herein and screening a suitable nucleic acid source for allelic variants and/or the desired homologue.

- 5 The present invention provides a polynucleotide comprising, or alternatively consisting of, the nucleic acid sequence of SEQ ID NO:X and/or a cDNA contained in ATCC Deposit No.Z. The present invention also provides a polypeptide comprising, or alternatively, consisting of, the polypeptide sequence of SEQ ID NO:Y, a polypeptide encoded by SEQ ID NO:X, and/or a polypeptide encoded by a cDNA contained in ATCC deposit No.Z. Polynucleotides encoding a
- 10 polypeptide comprising, or alternatively consisting of the polypeptide sequence of SEQ ID NO:Y, a polypeptide encoded by SEQ ID NO:X and/or a polypeptide encoded by the cDNA contained in ATCC Deposit No.Z, are also encompassed by the invention. The present invention further encompasses a polynucleotide comprising, or alternatively consisting of the complement of the nucleic acid sequence of SEQ ID NO:X, and/or the complement of the coding strand of the cDNA
- 15 contained in ATCC Deposit No.Z.

Table 1A

Gene No.	cDNA Clone ID	ATCC Deposit No.:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First A of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
1	H2CBU83	209889 05/22/98	pBluescript SK-	11	2703	1	2703	157	157	300	1	30	31	207
1	H2CBU83	209889 05/22/98	pBluescript SK-	189	2709	1	2709	157	157	478	1	30	31	51
2	H6EDC19	209324 10/02/97	Uni-ZAP XR	12	760	324	760	389	389	301	1	25	26	114
3	HACBD91	209626 02/12/98	Uni-ZAP XR	13	1445	1	1445	117	117	302	1	42	43	49
4	HAGAQ26	209368 10/16/97	Uni-ZAP XR	14	1333	157	1333	251	251	303	1	20	21	62
5	HAGDS35	209299 09/25/97	Uni-ZAP XR	15	751	1	751	45	45	304	1	23	24	122
5	HAGDS35	209299 09/25/97	Uni-ZAP XR	190	813	1	813	52	52	479	1	23	24	118
6	HAIAN23	PTA-322 07/09/99	pCMVSPORT 3.0	16	2849	1	2849	109	109	305	1	15	16	563
6	HAIAN23	PTA-322 07/09/99	pCMVSPORT 3.0	191	2288	1	2288	120	120	480	1	15	16	169
7	HAIER69	209626 02/12/98	pCMVSPORT 3.0	17	755	1	755	262	262	306	1	19	20	53
8	HAMFE15	203364 10/19/98	pCMVSPORT 3.0	18	4129	1	4129	1495	1495	307	1	34	35	421

Gene No.	cDNA Clone ID	ATCC Deposit No.:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
8	HAMFE15	203364 10/19/98	pCMVSPORT 3.0	192	3758	1	3758	226	226	481	1	23	24	47
9	HAMGR28	209965 06/11/98	pCMVSPORT 3.0	19	1674	47	1674	98	98	308	1	18	19	242
9	HAMGR28	209965 06/11/98	pCMVSPORT 3.0	193	1534	1	1534	40	40	482	1	18	19	203
10	HAPOM49	209878 05/18/98	Uni-ZAP XR	20	2005	1	2005	251	251	309	1	22	23	189
10	HAPOM49	209878 05/18/98	Uni-ZAP XR	194	2664	1	2664	448	448	483	1	1	2	123
11	HATBR65	209626 02/12/98	Uni-ZAP XR	21	812	1	812	252	252	310	1	16	17	64
12	HAUAI83	209626 02/12/98	Uni-ZAP XR	22	910	1	886	253	253	311	1	18	19	49
12	HAUAI83	209626 02/12/98	Uni-ZAP XR	195	1076	1	1076		575	484	1	10	11	23
13	HBAMB15	209683 03/20/98	pSPORT1	23	821	330	821	390	390	312	1	19	20	59
14	HBGBA69	209878 05/18/98	Uni-ZAP XR	24	981	1	981	124	124	313	1	38	39	240
14	HBGBA69	209878 05/18/98	Uni-ZAP XR	196	943	1	933	62	62	485	1	38	39	60
15	HBIAE26	209224 08/28/97	Uni-ZAP XR	25	1038	1	1038	75	75	314	1	18	19	39
16	HBINS58	PTA-885 10/28/99	pCMVSPORT 3.0	26	843	1	843	57	57	315	1	30	31	174

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First A of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
16	HBINS58	PTA-885 10/28/99	pCMVSPORT 3.0	197	1566	1	1566	71	71	486	1	29	30	173
16	HBINS58	PTA-885 10/28/99	pCMVSPORT 3.0	198	1067	1	1067	100	100	487	1	29	30	210
17	HBNAW17	209242 09/12/97	Uni-ZAP XR	27	601	1	601	77	77	316	1	37	38	61
18	HCE2F54	209626 02/12/98	Uni-ZAP XR	28	1276	19	1256	166	166	317	1	19	20	319
19	HCE3G69	209878 05/18/98	Uni-ZAP XR	29	2084	1	2084	165	165	318	1	19	20	336
19	HCE3G69	209878 05/18/98	Uni-ZAP XR	199	2078	1	2078	165	165	488	1	19	20	105
20	HCE5F43	209580 01/14/98	Uni-ZAP XR	30	1765	1	1765	113	113	319	1	20	21	272
21	HCEFB80	PTA-2069 06/09/00	Uni-ZAP XR	31	2494	1	2494	12	12	320	1	35	36	89
21	HCEFB80	PTA-2069 06/09/00	Uni-ZAP XR	200	2494	1	2451	5	5	489	1	35	36	89
22	HCEWE20	209300 09/25/97	Uni-ZAP XR	32	885	13	885	166	166	321	1	18	19	51
23	HCGMD59	209627 02/12/98	pCMVSPORT 2.0	33	790	1	780	438	438	322	1	30	31	74
24	HCNDR47	PTA-855 10/18/99	Lambda ZAP II	34	1343	1	1343	21	21	323	1	24	25	127
24	HCNDR47	PTA-855 10/18/99	Lambda ZAP II	201	845	1	845	124	124	490	1	47	48	127

Gene No.	cDNA Clone ID	ATCC Deposit No.:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
24	HCNDR47	PTA-855 10/18/99	Lambda ZAP II	202	738	1	738		603	491	1	8	9	9
25	HCNSM70	209580 01/14/98	pBluescript	35	1089	1	1089	107	107	324	1	26	27	215
25	HCNSM70	209580 01/14/98	pBluescript	203	1145	62	1145	161	161	492	1	26	27	91
26	HCUIM65	209324 10/02/97	ZAP Express	36	875	331	736	557	557	325	1	27	28	47
27	HCWDS72	209852 05/07/98	ZAP Express	37	320	1	320	19	19	326	1	17	18	100
28	HCWK15	209324 10/02/97	ZAP Express	38	710	1	710	37	37	327	1	18	19	40
29	HDHEB60	209215 08/21/97	pCMVSPORT 2.0	39	1421	235	1421	568	568	328	1	24	25	108
30	HDPBA28	PTA-163 06/01/99	pCMVSPORT 3.0	40	3447	197	3447	259	259	329	1	32	33	941
30	HDPBA28	PTA-163 06/01/99	pCMVSPORT 3.0	204	4909	1	4909	69	69	493	1	32	33	941
31	HDPCL63	PTA-1544 03/21/00	pCMVSPORT 3.0	41	3037	115	3037	35	35	330	1	58	59	267
31	HDPCL63	PTA-1544 03/21/00	pCMVSPORT 3.0	205	2921	1	2921	260	260	494	1	17	18	157
31	HDPCL63	PTA-1544 03/21/00	pCMVSPORT 3.0	206	1259	358	1259		605	495	1	6	7	118
32	HDPCL63	PTA-1544 03/21/00	pCMVSPORT 3.0	42	767	76	767	182	182	331	1	20	21	53

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
33	HDPFP29	209626 02/12/98	pCMVSPORT 3.0	43	1057	1	1057	293	293	332	1	30	31	52
34	HDPGT01	203027 06/26/98	pCMVSPORT 3.0	44	2687	138	2687	8	8	333	1	28	29	87
35	HDPHI51	209125 06/19/97	pCMVSPORT 3.0	45	728	1	728	245	245	334	1	30	31	40
36	HDPJM30	209563 12/18/97	pCMVSPORT 3.0	46	1635	308	1633	59	59	335	1	59	60	525
36	HDPJM30	209563 12/18/97	pCMVSPORT 3.0	207	1314	1	1313	259	259	496	1	20	21	59
37	HDPMM88	PTA-848 10/13/99	pCMVSPORT 3.0	47	4893	1	4893	100	100	336	1	37	38	937
37	HDPMM88	PTA-848 10/13/99	pCMVSPORT 3.0	208	468	1	468	141	141	497	1	20	21	109
37	HDPMM88	PTA-848 10/13/99	pCMVSPORT 3.0	209	181	1	181		44	498	1	7	8	46
37	HDPMM88	PTA-848 10/13/99	pCMVSPORT 3.0	210	612	1	612		419	499	1			6
37	HDPMM88	PTA-848 10/13/99	pCMVSPORT 3.0	211	1024	1	1024		111	500	1	5	6	11
37	HDPMM88	PTA-848 10/13/99	pCMVSPORT 3.0	212	366	18	321		167	501	1	1	2	56
37	HDPMM88	PTA-848 10/13/99	pCMVSPORT 3.0	213	519	1	519		28	502	1	1	2	53
38	HDPJO8	209878 05/18/98	pCMVSPORT 3.0	48	1655	1	1655	159	159	337	1	18	19	122

Gene No.	cDNA Clone ID	ATCC Deposit No.:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
39	HDPN86	PTA-867 10/26/99	pCMVSPORT 3.0	49	6297	1	6297	127	127	338	1	32	33	46
39	HDPN86	PTA-867 10/26/99	pCMVSPORT 3.0	214	2042	1	2042	117	117	503	1	26	27	46
40	HDPB18	PTA-868 10/26/99	pCMVSPORT 3.0	50	3408	1	3408	123	123	339	1	18	19	66
40	HDPB18	PTA-868 10/26/99	pCMVSPORT 3.0	215	308	1	308		116	504	1	17	18	64
40	HDPB18	PTA-868 10/26/99	pCMVSPORT 3.0	216	1568	1	1568		1525	505	1	7	8	14
40	HDPB18	PTA-868 10/26/99	pCMVSPORT 3.0	217	865	1	865		345	506	1	1	2	107
41	HDPH53	PTA-868 10/26/99	pCMVSPORT 3.0	51	1663	1	1663	158	158	340	1	19	20	90
41	HDPH53	PTA-868 10/26/99	pCMVSPORT 3.0	218	1687	1	1687	153	153	507	1	19	20	127
41	HDPH53	PTA-868 10/26/99	pCMVSPORT 3.0	219	570	1	570	212	212	508	1	19	20	90
42	HDPSP01	209745 04/07/98	pCMVSPORT 3.0	52	2343	1	2343	184	184	341	1	20	21	710
42	HDPSP01	209745 04/07/98	pCMVSPORT 3.0	220	1752	1	1752	227	227	509	1	20	21	308
43	HDPSP54	209782 04/20/98	pCMVSPORT 3.0	53	3091	2304	3091	2356	2356	342	1	18	19	48
43	HDPSP54	209782 04/20/98	pCMVSPORT 3.0	221	536	1	536	179	179	510	1	41	42	55

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA Signal Pep	AA SEQ ID NO:Y	First A of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
44	HDP UW68	203331 10/08/98	pCMV Sport 3.0	54	1748	1	1748	40	40	343	1	18	19	467
45	HDP XY01	PTA-868 10/26/99	pCMV Sport 3.0	55	766	1	766	23	23	344	1	37	38	98
45	HDP XY01	PTA-868 10/26/99	pCMV Sport 3.0	222	2409	1	2409	33	33	511	1	37	38	98
45	HDP XY01	PTA-868 10/26/99	pCMV Sport 3.0	223	737	1	423		539	512	1	9	10	22
45	HDP XY01	PTA-868 10/26/99	pCMV Sport 3.0	224	1471	105	1471		1190	513	1	16	17	25
46	HDT BD53	PTA-848 10/13/99	pCMV Sport 2.0	56	2803	1	2803	288	288	345	1	22	23	365
46	HDT BD53	PTA-848 10/13/99	pCMV Sport 2.0	225	3302	1	2718	292	292	514	1	22	23	365
47	HDT BV77	203070 07/27/98	pCMV Sport 2.0	57	2181	1	2181	326	326	346	1	22	23	608
48	HDT DQ23	209965 06/11/98	pCMV Sport 2.0	58	2207	1	2207	132	132	347	1	20	21	56
48	HDT DQ23	209965 06/11/98	pCMV Sport 2.0	226	2227	1	2206	148	148	515	1	20	21	108
48	HDT DQ23	209965 06/11/98	pCMV Sport 2.0	227	2214	1	2206	148	148	516	1	20	21	73
49	HE2 DE47	97923 03/07/97 209071 05/22/97	Uni-ZAP XR	59	3533	2821	3532	808	808	348	1	30	31	540

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA Signal Pep	AA SEQ ID NO:Y	First A of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
49	HE2DE47	97923 03/07/97 209071 05/22/97	Uni-ZAP XR	228	1145	435	1115	515	515	517	1	22	23	81
50	HE2NV57	209877 05/18/98	Uni-ZAP XR	60	867	1	867	99	99	349	1	36	37	99
51	HE2PH36	209603 01/29/98	Uni-ZAP XR	61	1558	1	1558	28	28	350	1	21	22	66
52	HE8DS15	PTA-1544 03/21/00	Uni-ZAP XR	62	2199	1	2199	91	91	351	1	24	25	72
53	HE9HY07	209010 04/28/97 209085 05/29/97	Uni-ZAP XR	63	832	1	832	35	35	352	1	26	27	41
54	HEOMQ63	209563 12/18/97	pSport1	64	1336	1	1336	123	123	353	1	23	24	47
55	HEPAB80	209423 10/30/97	Uni-ZAP XR	65	799	1	799	73	73	354	1	28	29	121
55	HEPAB80	209423 10/30/97	Uni-ZAP XR	229	802	1	802	67	67	518	1	28	29	122
56	HFABH95	209407 10/23/97	Uni-ZAP XR	66	1347	1	1347	199	199	355	1	21	22	116
57	HFABF57	209277 09/18/97	Uni-ZAP XR	67	642	1	642	232	232	356	1	42	43	86

Gene No.	cDNA Clone ID	ATCC Deposit No.:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA Signal Pep	AA SEQ ID NO:Y	First A of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
58	HFCEB37	209008 04/28/97 209084 05/29/97	Uni-ZAP XR	68	802	352	802		487	357	1			10
59	HFFAD59	209242 09/12/97	Lambda ZAP II	69	470	1	470	44	44	358	1	17	18	45
60	HFGAD82	209225 08/28/97	Uni-ZAP XR	70	1881	772	1861	1019	1019	359	1	18	19	38
61	HFIUR10	209277 09/18/97	pSport1	71	541	1	541	50	50	360	1	22	23	44
62	HFTBM50	209300 09/25/97	Uni-ZAP XR	72	762	1	740	158	158	361	1	20	21	34
63	HFTDZ36	209300 09/25/97	Uni-ZAP XR	73	1103	231	1103	547	547	362	1	22	23	68
64	HFXBL33	203071 07/27/98	Lambda ZAP II	74	1633	1	1633	152	152	363	1	24	25	162
65	HFXIX44	209782 04/20/98	Lambda ZAP II	75	1384	1	1384	98	98	364	1	18	19	47
66	HFXKT05	209651 03/04/98	Lambda ZAP II	76	1715	1	1715	204	204	365	1	18	19	79
67	HGBHI35	209423 10/30/97	Uni-ZAP XR	77	1437	71	1276	87	87	366	1	16	17	292
68	HGLAF75	209407 10/23/97	Uni-ZAP XR	78	776	1	776	231	231	367	1	28	29	121
69	HHENV10	209368 10/16/97	pCMVSPORT 3.0	79	1155	1	1155	143	143	368	1	27	28	50

Gene No.	cDNA Clone ID	ATCC Deposit No.:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
70	HHGCG53	97899 02/26/97 209045 05/15/97	Lambda ZAP II	80	407	1	407	230	230	369	1	33	34	44
71	HHGCM76	97958 03/13/97 209072 05/22/97	Lambda ZAP II	81	711	8	711	270	270	370	1	22	23	89
71	HHGCM76	97958 03/13/97 209072 05/22/97	Lambda ZAP II	230	711	8	711	270	270	519	1			11
72	HHPEN62	209746 04/07/98	Uni-ZAP XR	82	2152	141	2152	183	183	371	1	27	28	508
73	HJABB94	209119 06/12/97	pBluescript SK-	83	1555	1	1555	74	74	372	1	28	29	77
74	HJACG30	PTA-843 10/13/99	pBluescript SK-	84	1532	1	1532	291	291	373	1	27	28	44
74	HJACG30	PTA-843 10/13/99	pBluescript SK-	231	1614	1020	1614		50	520	1	1	2	130
74	HJACG30	PTA-843 10/13/99	pBluescript SK-	232	1087	491	1087		350	521	1	1	2	122
75	HJBCY35	209877 05/18/98	pBluescript SK-	85	1559	93	1272	232	232	374	1	23	24	327
76	HJPAD75	209641 02/25/98	Uni-ZAP XR	86	1231	1	1231	60	60	375	1	29	30	91

Gene No.	cDNA Clone ID	ATCC Deposit No.:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
77	HKABZ65	209683 03/20/98	pCMVSPORT 2.0	87	1189	1	1189	77	77	376	1	17	18	243
77	HKABZ65	209683 03/20/98	pCMVSPORT 2.0	233	1191	1	1191	69	69	522	1	17	18	243
78	HKACB56	209346 10/09/97	pCMVSPORT 2.0	88	496	1	496	27	27	377	1	23	24	80
79	HKACD58	209346 10/09/97	pCMVSPORT 2.0	89	3153	1	3153	38	38	378	1	25	26	301
79	HKACD58	209346 10/09/97	pCMVSPORT 2.0	234	1626	1	1626	35	35	523	1	25	26	154
80	HKA EV06	209627 02/12/98	pCMVSPORT 2.0	90	2496	1	2496	501	501	379	1	30	31	438
80	HKA EV06	209627 02/12/98	pCMVSPORT 2.0	235	2351	1	2351	197	197	524	1	29	30	57
81	HKAFT66	PTA-849 10/13/99	pCMVSPORT 2.0	91	1001	270	1001	508	508	380	1	41	42	107
81	HKAFT66	PTA-849 10/13/99	pCMVSPORT 2.0	236	1001	270	1001	508	508	525	1	41	42	107
81	HKAFT66	PTA-849 10/13/99	pCMVSPORT 2.0	237	669	1	669	234	234	526	1			37
82	HKB1E57	209651 03/04/98	pCMVSPORT 1	92	1142	1038	1142	178	178	381	1	30	31	234
82	HKB1E57	209651 03/04/98	pCMVSPORT 1	238	417	1	417	30	30	527	1	26	27	46
83	HKFBC53	209782 04/20/98	ZAP Express	93	2238	1	2238	64	64	382	1	15	16	470

Gene No.	cDNA Clone ID	ATCC Deposit No.:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First A of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
83	HKFBC53	209782 04/20/98	ZAP Express	239	1949	1	1906	41	41	528	1	18	19	442
83	HKFBC53	209782 04/20/98	ZAP Express	240	1487	1	1487		3	529	1	1	2	309
83	HKFBC53	209782 04/20/98	ZAP Express	241	1525	1	1525		3	530	1	1	2	243
84	HKGDL36	209877 05/18/98	pSport1	94	1052	1	1052	53	53	383	1	33	34	260
84	HKGDL36	209877 05/18/98	pSport1	242	1050	1	1050	55	55	531	1	33	34	148
85	HKISB57	209603 01/29/98	pBluescript	95	1492	1	1439	130	130	384	1	19	20	95
86	HKMLM11	209236 09/04/97	pBluescript	96	954	1	954	82	82	385	1	20	21	130
87	HKMMW74	209463 11/14/97	pBluescript	97	1794	1	1794	202	202	386	1	21	22	41
88	HLDON23	209628 02/12/98	pCMV Sport 3.0	98	1262	208	1256	368	368	387	1	20	21	113
89	HLDQR62	203027 06/26/98	pCMV Sport 3.0	99	2572	427	2572	520	520	388	1	18	19	161
90	HLDOU79	203071 07/27/98	pCMV Sport 3.0	100	1488	1	1488	99	99	389	1	23	24	348
91	HLHAL68	209746 04/07/98	Uni-ZAP XR	101	704	1	704	30	30	390	1	21	22	44
92	HLBD68	203071 07/27/98	pCMV Sport 1	102	1022	1	1022	186	186	391	1	35	36	50

Gene No.	cDNA Clone ID	ATCC Deposit No.:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
93	HLICQ90	203517 12/10/98	pCMVSPORT 1	103	1766	1	1766	249	249	392	1	29	30	206
94	HLTHR66	209782 04/20/98	Uni-ZAP XR	104	2286	1	2286	5	5	393	1	34	35	75
95	HLTIP94	PTA-2076 06/09/00	Uni-ZAP XR	105	1240	1	1170	226	226	394	1	26	27	97
95	HLTIP94	PTA-2076 06/09/00	Uni-ZAP XR	243	647	1	647	226	226	532	1	26	27	65
95	HLTIP94	PTA-2076 06/09/00	Uni-ZAP XR	244	1321	870	1209		3	533	1	1	2	299
96	HLWAA17	209626 02/12/98	pCMVSPORT 3.0	106	997	246	997	436	436	395	1	15	16	187
97	HL YAC95	203071 07/27/98	pSPORT1	107	312	1	312	92	92	396	1	16	17	46
98	HMAADK33	209368 10/16/97	Uni-ZAP XR	108	864	1	864	161	161	397	1	24	25	152
99	HMAAMI15	PTA-2075 06/09/00	Uni-ZAP XR	109	1258	1	1258	4	4	398	1	26	27	340
99	HMAAMI15	PTA-2075 06/09/00	Uni-ZAP XR	245	1084	1	1084	3	3	534	1	26	27	306
100	HMCIFY13	209628 02/12/98	Uni-ZAP XR	110	883	1	883	175	175	399	1	27	28	64
101	HMDAB56	209368 10/16/97	Uni-ZAP XR	111	1465	1	1465	273	273	400	1	32	33	44
102	HMBED18	209368 10/16/97	Lambda ZAP II	112	1369	28	1369	34	34	401	1	34	35	221

Gene No.	cDNA Clone ID	ATCC Deposit No.:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
103	HMEFT54	209243 09/12/97	Lambda ZAP II	113	596	1	596	332	332	402	1	19	20	39
104	HMEGF92	209243 09/12/97	Lambda ZAP II	114	629	1	611	92	92	403	1	27	28	62
105	HMSDL37	PTA-842 10/13/99	Uni-ZAP XR	115	2497	1	2497	531	531	404	1	26	27	64
105	HMSDL37	PTA-842 10/13/99	Uni-ZAP XR	246	1776	1	1776	528	528	535	1	26	27	64
105	HMSDL37	PTA-842 10/13/99	Uni-ZAP XR	247	784	1	784	565	565	536	1	6	7	26
105	HMSDL37	PTA-842 10/13/99	Uni-ZAP XR	248	699	275	427		2	537	1	1	2	50
106	HMSFI26	209368 10/16/97	Uni-ZAP XR	116	1217	1	1217	120	120	405	1	34	35	62
107	HMVBS81	209628 02/12/98	pSport1	117	529	1	529	34	34	406	1	43	44	139
108	HMWDC28	209126 06/19/97	Uni-ZAP XR	118	1146	105	754	124	124	407	1	30	31	42
109	HMWFT65	209368 10/16/97	Uni-ZAP XR	119	1346	1	1346	72	72	408	1	27	28	121
110	HNEEE24	209346 10/09/97	Uni-ZAP XR	120	1079	1	1079	213	213	409	1	21	22	71
111	HNFEC43	203027 06/26/98	Uni-ZAP XR	121	2103	209	2058	488	488	410	1	12	13	68
112	HNFY77	209628 02/12/98	pBluescript	122	1212	28	1212	228	228	411	1	34	35	233

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
113	HNFJF07	209463 11/14/97	Uni-ZAP XR	123	616	1	616	86	86	412	1	21	22	66
114	HNGFR31	209407 10/23/97	Uni-ZAP XR	124	536	1	536	108	108	413	1	23	24	90
115	HNGJ31	209236 09/04/97	Uni-ZAP XR	125	796	1	796	135	135	414	1	16	17	36
116	HNGJE50	209368 10/16/97	Uni-ZAP XR	126	1037	1	1037	77	77	415	1	36	37	46
117	HNGND37	203648 02/09/99	Uni-ZAP XR	127	841	1	841	388	388	416	1	27	28	82
118	HNGOI12	PTA-847 10/13/99	Uni-ZAP XR	128	2128	1	2128	27	27	417	1	34	35	57
118	HNGOI12	PTA-847 10/13/99	Uni-ZAP XR	249	774	1	774	27	27	538	1	34	35	57
118	HNGOI12	PTA-847 10/13/99	Uni-ZAP XR	250	1396	1	1396		596	539	1	25	26	93
119	HNHEU93	209628 02/12/98	Uni-ZAP XR	129	748	1	748	57	57	418	1	34	35	81
120	HNHFM14	209683 03/20/98	Uni-ZAP XR	130	297	1	297	38	38	419	1	28	29	80
121	HNHNB29	PTA-623 09/02/99	Uni-ZAP XR	131	1894	1	1894	40	40	420	1	20	21	53
122	HNHOD46	PTA-1543 03/21/00	Uni-ZAP XR	132	1355	1	1355	12	12	421	1	20	21	80
123	HNTBI26	209563 12/18/97	pCMVSPORT 3.0	133	1382	1	1382	28	28	422	1	35	36	320

Gene No.	cDNA Clone ID	ATCC Deposit No.:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
123	HNTBI26	209563 12/18/97	pCMVSPORT 3.0	251	1397	1	1397	32	32	540	1	35	36	172
123	HNTBI26	209563 12/18/97	pCMVSPORT 3.0	252	1368	1	1368	16	16	541	1	35	36	131
124	HNTBL27	209324 10/02/97	pCMVSPORT 3.0	134	791	71	791	100	100	423	1	23	24	115
125	HNTCE26	PTA-1544 03/21/00	pCMVSPORT 3.0	135	2163	830	2163	111	111	424	1	30	31	402
125	HNTCE26	PTA-1544 03/21/00	pCMVSPORT 3.0	253	1763	1	1763	57	57	542	1	28	29	121
126	HNTNI01	209782 04/20/98	pSPORT1	136	2087	1	2087	307	307	425	1	33	34	76
126	HNTNI01	209782 04/20/98	pSPORT1	254	1274	1	1114	306	306	543	1	33	34	49
127	HODDF13	203069 07/27/98	Uni-ZAP XR	137	830	1	830	46	46	426	1	23	24	41
128	HODDN92	209012 04/28/97 209089 06/05/97	Uni-ZAP XR	138	1939	294	1939		434	427	1	26	27	35
129	HOFMQ33	PTA-848 10/13/99	pCMVSPORT 2.0	139	2410	1	2410	49	49	428	1	24	25	484
129	HOFMQ33	PTA-848 10/13/99	pCMVSPORT 2.0	255	2409	1	2409	48	48	544	1	24	25	484
129	HOFMQ33	PTA-848 10/13/99	pCMVSPORT 2.0	256	876	1	876	78	78	545	1	24	25	266

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
129	HOFMQ33	PTA-848 10/13/99	pCMVSPORT 2.0	257	1586	1	1586		724	546	1			5
129	HOFMQ33	PTA-848 10/13/99	pCMVSPORT 2.0	258	1011	873	1011		123	547	1	1	2	84
130	HOFQC73	PTA-848 10/13/99	pCMVSPORT 2.0	140	1491	1	1491	18	18	429	1	18	19	129
130	HOFQC73	PTA-848 10/13/99	pCMVSPORT 2.0	259	1395	1	1395	23	23	548	1	18	19	67
130	HOFQC73	PTA-848 10/13/99	pCMVSPORT 2.0	260	270	1	270		127	549	1	4	5	14
130	HOFQC73	PTA-848 10/13/99	pCMVSPORT 2.0	261	2324	662	2324	142	142	550	1			6
131	HOQB182	PTA-845 10/13/99	Uni-ZAP XR	141	3530	1	3530	361	361	430	1	21	22	164
131	HOQB182	PTA-845 10/13/99	Uni-ZAP XR	262	585	64	585	102	102	551	1	24	25	161
131	HOQB182	PTA-845 10/13/99	Uni-ZAP XR	263	4344	1339	1942		55	552	1	1	2	325
132	HOSBY40	209551 12/12/97	Uni-ZAP XR	142	1145	1	1145	89	89	431	1	30	31	56
133	HOSD125	209423 10/30/97	Uni-ZAP XR	143	2214	985	2214	1076	1076	432	1	18	19	40
133	HOSD125	209423 10/30/97	Uni-ZAP XR	264	1258	1	1258	146	146	553	1	18	19	40
134	HPEAD79	209244 09/12/97	Uni-ZAP XR	144	813	1	813	51	51	433	1	15	16	41

Gene No.	cDNA Clone ID	ATCC Deposit No.:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
135	HPJBO15	209563 12/18/97	Uni-ZAP XR	145	1739	1	1739	128	128	434	1	18	19	211
135	HPJBO15	209563 12/18/97	Uni-ZAP XR	265	1739	1	1739	127	127	554	1	18	19	173
136	HPJBI33	209889 05/22/98	Uni-ZAP XR	146	1677	1	1677	236	236	435	1	31	32	53
137	HPJBK12	PTA-855 10/18/99	Uni-ZAP XR	147	2648	1	2648	126	126	436	1	18	19	48
137	HPJBK12	PTA-855 10/18/99	Uni-ZAP XR	266	538	1	538	119	119	555	1	18	19	48
137	HPJBK12	PTA-855 10/18/99	Uni-ZAP XR	267	1346	1	1346		969	556	1			10
137	HPJBK12	PTA-855 10/18/99	Uni-ZAP XR	268	912	1	912	509	509	557	1			4
138	HPMDK28	209628 02/12/98	Uni-ZAP XR	148	1084	1	1084	64	64	437	1	25	26	201
138	HPMDK28	209628 02/12/98	Uni-ZAP XR	269	1177	1	1083	58	58	558	1	25	26	201
139	HPRAL78	209195 08/01/97	Uni-ZAP XR	149	2072	1	2072	62	62	438	1	29	30	420
139	HPRAL78	209195 08/01/97	Uni-ZAP XR	270	1775	1038	1775	70	70	559	1	29	30	392
139	HPRAL78	209195 08/01/97	Uni-ZAP XR	271	866	128	866	148	148	560	1	42	43	63
140	HRABA80	209889 05/22/98	pCMV Sport 3.0	150	1251	1	1251	144	144	439	1	27	28	102

Gene No.	cDNA Clone ID	ATCC Deposit No.:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
140	HRABA80	209889 05/22/98	pCMVSPORT 3.0	272	1237	1	1237	130	130	561	1	27	28	102
141	HRACD15	209852 05/07/98	pCMVSPORT 3.0	151	1539	24	1539	252	252	440	1	40	41	53
141	HRACD15	209852 05/07/98	pCMVSPORT 3.0	273	1681	24	1453	252	252	562	1	40	41	53
142	HRACJ35	209878 05/18/98	pCMVSPORT 3.0	152	2077	1	2077	132	132	441	1	24	25	472
142	HRACJ35	209878 05/18/98	pCMVSPORT 3.0	274	1863	8	1863	99	99	563	1	24	25	472
142	HRACJ35	209878 05/18/98	pCMVSPORT 3.0	275	1134	1	1134		1	564	1	1	2	178
143	HRGBL78	PTA-841 10/13/99	Uni-ZAP XR	153	2108	1	2108	30	30	442	1	27	28	359
143	HRGBL78	PTA-841 10/13/99	Uni-ZAP XR	276	626	8	626	30	30	565	1	38	39	199
143	HRGBL78	PTA-841 10/13/99	Uni-ZAP XR	277	152	1	152		11	566	1			2
143	HRGBL78	PTA-841 10/13/99	Uni-ZAP XR	278	1760	127	1760		1048	567	1	10	11	32
144	HROAJ39	PTA-2069 06/09/00	Uni-ZAP XR	154	1146	224	1146	10	10	443	1	30	31	379
144	HROAJ39	PTA-2069 06/09/00	Uni-ZAP XR	279	880	1	880	31	31	568	1	15	16	283
144	HROAJ39	PTA-2069 06/09/00	Uni-ZAP XR	280	1106	224	1106	247	247	569	1	15	16	286

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
145	HROBD68	203499 12/01/98	Uni-ZAP XR	155	1998	1	1998	122	122	444	1	22	23	48
146	HSAWD74	209126 06/19/97	Uni-ZAP XR	156	970	106	970	142	142	445	1	26	27	142
146	HSAWD74	209126 06/19/97	Uni-ZAP XR	281	646	1	646	122	122	570	1	29	30	45
147	HSDEK49	209603 01/29/98	Uni-ZAP XR	157	1782	1	1782	60	60	446	1	19	20	399
147	HSDEK49	209603 01/29/98	Uni-ZAP XR	282	1590	96	1590	126	126	571	1	21	22	305
148	HSDFI26	203648 02/09/99	Uni-ZAP XR	158	1205	23	1179	99	99	447	1	20	21	223
148	HSDFI26	203648 02/09/99	Uni-ZAP XR	283	1179	1	1179	99	99	572	1	19	20	72
149	HSDSB09	209145 07/17/97	pBluescript	159	809	1	809	16	16	448	1	17	18	135
149	HSDSB09	209145 07/17/97	pBluescript	284	819	1	819	22	22	573	1	17	18	121
150	HSDSE75	209324 10/02/97	pBluescript	160	1151	1	1151	160	160	449	1	18	19	181
151	HSIDJ81	209551 12/12/97	Uni-ZAP XR	161	1303	1	1303	8	8	450	1	22	23	58
152	HSKDA27	PTA-322 07/09/99	Uni-ZAP XR	162	4412	1	4412	786	786	451	1	24	25	950
152	HSKDA27	PTA-322 07/09/99	Uni-ZAP XR	285	1792	134	1792	127	127	574	1	21	22	509

Gene No.	cDNA Clone ID	ATCC Deposit No.:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First A of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
152	HSKDA27	PTA-322 07/09/99	Uni-ZAP XR	286	1673	1	1673	12	12	575	1	21	22	554
153	HSKGN81	97977 04/04/97 209082 05/29/97	pBluescript	163	1907	151	1432	353	353	452	1	23	24	260
153	HSKGN81	97977 04/04/97 209082 05/29/97	pBluescript	287	2084	335	2084	537	537	576	1	18	19	23
154	HSNAD72	209139 07/03/97	Uni-ZAP XR	164	861	1	861	220	220	453	1	19	20	35
155	HSNMC45	209300 09/25/97	Uni-ZAP XR	165	587	1	587	225	225	454	1	18	19	55
155	HSNMC45	209300 09/25/97	Uni-ZAP XR	288	720	1	720	232	232	577	1	17	18	25
156	HSQFP66	209126 06/19/97	Uni-ZAP XR	166	477	1	477	96	96	455	1	32	33	78
157	HSRFPZ57	PTA-622 09/02/99	Uni-ZAP XR	167	1930	1	1925	82	82	456	1	18	19	41
158	HSUBW09	209007 04/28/97 209083 05/29/97	Uni-ZAP XR	168	1021	1	1021	153	153	457	1	31	32	56
159	HSVBU91	209603 01/29/98	Uni-ZAP XR	169	727	1	727	256	256	458	1	18	19	90

Gene No.	cDNA Clone ID	ATCC Deposit No.:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
160	HTAEE28	PTA-843 10/13/99	Uni-ZAP XR	170	1341	1	1341	319	319	459	1	33	34	282
160	HTAEE28	PTA-843 10/13/99	Uni-ZAP XR	289	738	159	738	372	372	578	1	33	34	122
160	HTAEE28	PTA-843 10/13/99	Uni-ZAP XR	290	935	1	807		124	579	1	1	2	216
161	HTECC05	209877 05/18/98	Uni-ZAP XR	171	839	1	839	13	13	460	1	15	16	178
161	HTECC05	209877 05/18/98	Uni-ZAP XR	291	871	1	871	21	21	580	1	15	16	127
161	HTECC05	209877 05/18/98	Uni-ZAP XR	292	881	1	881	27	27	581	1	15	16	164
162	HTEEB42	97922 03/07/97 209070 05/22/97	Uni-ZAP XR	172	1022	20	1022	59	59	461	1	22	23	298
163	HTEFU65	209324 10/02/97	Uni-ZAP XR	173	1028	1	1028	231	231	462	1	24	25	46
164	HTELP17	203648 02/09/99	Uni-ZAP XR	174	808	1	808	164	164	463	1	20	21	44
165	HTELS08	PTA-1544 03/21/00	Uni-ZAP XR	175	1898	1	1898	15	15	464	1	17	18	158
166	HTLEP53	209641 02/25/98	Uni-ZAP XR	176	818	1	818	73	73	465	1	43	44	101
167	HTPCS72	209423 10/30/97	Uni-ZAP XR	177	3435	2141	3431	2365	2365	466	1	29	30	71

Gene No.	cDNA Clone ID	ATCC Deposit No.:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
167	HTPCS72	209423 10/30/97	Uni-ZAP XR	293	1598	306	1598	530	530	582	1	29	30	71
168	HTPIH83	PTA-871 10/26/99	Uni-ZAP XR	178	1481	1	1481	118	118	467	1	24	25	230
168	HTPIH83	PTA-871 10/26/99	Uni-ZAP XR	294	530	1	530	111	111	583	1	24	25	140
168	HTPIH83	PTA-871 10/26/99	Uni-ZAP XR	295	1046	359	1046		96	584	1	1	2	86
169	HTSEW17	209138 07/03/97	pBluescript	179	652	1	652	170	170	468	1	34	35	37
170	HTTB176	209641 02/25/98	Uni-ZAP XR	180	1711	1	1711	133	133	469	1	22	23	133
171	HTTBS64	PTA-841 10/13/99	Uni-ZAP XR	181	2058	1	2058	95	95	470	1	17	18	42
171	HTTBS64	PTA-841 10/13/99	Uni-ZAP XR	296	819	1	819	100	100	585	1	17	18	42
171	HTTBS64	PTA-841 10/13/99	Uni-ZAP XR	297	501	1	501		175	586	1	1	2	76
172	HTXJM03	209580 01/14/98	Uni-ZAP XR	182	2398	211	2398	328	328	471	1	18	19	56
173	HTXON32	203648 02/09/99	Uni-ZAP XR	183	1505	1	1505	72	72	472	1	22	23	52
174	HUFC130	209641 02/25/98	pSport1	184	868	1	868	123	123	473	1	29	30	50
175	HUVEB53	209603 01/29/98	Uni-ZAP XR	185	1502	1	1502	14	14	474	1	20	21	45

Gene No.	cDNA Clone ID	ATCC Deposit No:Z and Date	Vector	NT SEQ ID NO:X	Total NT Seq.	5' NT of Clone Seq.	3' NT of Clone Seq.	5' NT of Start Codon	5' NT of First AA of Signal Pep	AA SEQ ID NO:Y	First AA of Sig Pep	Last AA of Sig Pep	First AA of Secreted Portion	Last AA of ORF
176	HWAAD63	203570 01/11/99	pCMV/Sport 3.0	186	3308	1	3308	322	322	475	1	30	31	168
176	HWAAD63	203570 01/11/99	pCMV/Sport 3.0	298	3306	1	3306	322	322	587	1	30	31	53
176	HWAAD63	203570 01/11/99	pCMV/Sport 3.0	299	2194	1	2194	312	312	588	1	30	31	169
177	HWADJ89	PTA-1543 03/21/00	pCMV/Sport 3.0	187	1769	529	1769	581	581	476	1	1	2	43
178	HWBFX31	PTA-1543 03/21/00	pCMV/Sport 3.0	188	1677	1	1677	271	271	477	1	1	2	52

Table 1B (Comprised of Tables 1B.1 and 1B.2)

The first column in Table 1B.1 and Table 1B.2 provides the gene number in the application corresponding to the clone identifier. The second column in Table 1B.1 and Table 1B.2 provides a unique "Clone ID:" for the cDNA clone related to each contig sequence disclosed in Table 1B.1 and Table 1B.2. This clone ID references the cDNA clone which contains at least the 5' most sequence of the assembled contig and at least a portion of SEQ ID NO:X as determined by directly sequencing the referenced clone. The referenced clone may have more sequence than described in the sequence listing or the clone may have less. In the vast majority of cases, however, the clone is believed to encode a full-length polypeptide. In the case where a clone is not full-length, a full-length cDNA can be obtained by methods described elsewhere herein. The third column in Table 1B.1 and Table 1B.2 provides a unique "Contig ID" identification for each contig sequence. The fourth column in Table 1B.1 and Table 1B.2 provides the "SEQ ID NO:" identifier for each of the contig polynucleotide sequences disclosed in Table 1B.

Table 1B.1

The fifth column in Table 1B.1, "ORF (From-To)", provides the location (i.e., nucleotide position numbers) within the polynucleotide sequence "SEQ ID NO:X" that delineate the preferred open reading frame (ORF) shown in the sequence listing and referenced in Table 1B.1, column 6, as SEQ ID NO:Y. Where the nucleotide position number "To" is lower than the nucleotide position number "From", the preferred ORF is the reverse complement of the referenced polynucleotide sequence. The sixth column in Table 1B.1 provides the corresponding SEQ ID NO:Y for the polypeptide sequence encoded by the preferred ORF delineated in column 5. In one embodiment, the invention provides an amino acid sequence comprising, or alternatively consisting of, a polypeptide encoded by the portion of SEQ ID NO:X delineated by "ORF (From-To)". Also provided are polynucleotides encoding such amino acid sequences and the complementary strand thereto. Column 7 in Table 1B.1 lists residues comprising epitopes contained in the polypeptides encoded by the preferred ORF (SEQ ID NO:Y), as predicted using the algorithm of Jameson and Wolf, (1988) Comp. Appl. Biosci. 4:181-186. The Jameson-Wolf antigenic analysis was performed using the computer program PROTEAN (Version 3.11 for the Power MacIntosh, DNASTAR, Inc., 1228 South Park Street Madison, WI). In specific embodiments, polypeptides of the invention comprise, or alternatively consist of, at least one, two, three, four, five or more of the predicted epitopes as described in Table 1B. It will be appreciated that depending on the analytical criteria used to predict antigenic determinants, the exact address of the determinant may vary slightly.

Column 8 in Table 1B.1 provides a chromosomal map location for certain polynucleotides of the invention. Chromosomal location was determined by finding exact matches to

EST and cDNA sequences contained in the NCBI (National Center for Biotechnology Information) UniGene database. Each sequence in the UniGene database is assigned to a "cluster"; all of the ESTs, cDNAs, and STSs in a cluster are believed to be derived from a single gene. Chromosomal mapping data is often available for one or more sequence(s) in a UniGene cluster; this data (if consistent) is then applied to the cluster as a whole. Thus, it is possible to infer the chromosomal location of a new polynucleotide sequence by determining its identity with a mapped UniGene cluster.

A modified version of the computer program BLASTN (Altshul, et al., J. Mol. Biol. 215:403-410 (1990), and Gish, and States, Nat. Genet. 3:266-272) (1993) was used to search the UniGene database for EST or cDNA sequences that contain exact or near-exact matches to a polynucleotide sequence of the invention (the 'Query'). A sequence from the UniGene database (the 'Subject') was said to be an exact match if it contained a segment of 50 nucleotides in length such that 48 of those nucleotides were in the same order as found in the Query sequence. If all of the matches that met this criteria were in the same UniGene cluster, and mapping data was available for this cluster, it is indicated in Table 1B under the heading "Cytologic Band". Where a cluster had been further localized to a distinct cytologic band, that band is disclosed; where no banding information was available, but the gene had been localized to a single chromosome, the chromosome is disclosed.

Once a presumptive chromosomal location was determined for a polynucleotide of the invention, an associated disease locus was identified by comparison with a database of diseases which have been experimentally associated with genetic loci. The database used was the Morbid Map, derived from OMIM™ and National Center for Biotechnology Information, National Library of Medicine (Bethesda, MD) 2000;. If the putative chromosomal location of a polynucleotide of the invention (Query sequence) was associated with a disease in the Morbid Map database, an OMIM reference identification number was noted in column 9, Table 1B.1, labelled "OMIM Disease Reference(s). Table 5 is a key to the OMIM reference identification numbers (column 1), and provides a description of the associated disease in Column 2.

Table 1B.2

Column 5, in Table 1B.2, provides an expression profile and library code:count for each of the contig sequences (SEQ ID NO:X) disclosed in Table 1B, which can routinely be combined with the information provided in Table 4 and used to determine the tissues, cells, and/or cell line libraries which predominantly express the polynucleotides of the invention. The first number in Table 1B.2, column 5 (preceding the colon), represents the tissue/cell source identifier code corresponding to the code and description provided in Table 4. The second number in column 5 (following the colon) represents the number of times a sequence corresponding to the reference polynucleotide sequence was identified in the corresponding tissue/cell source. Those tissue/cell source identifier codes in

which the first two letters are "AR" designate information generated using DNA array technology. Utilizing this technology, cDNAs were amplified by PCR and then transferred, in duplicate, onto the array. Gene expression was assayed through hybridization of first strand cDNA probes to the DNA array. cDNA probes were generated from total RNA extracted from a variety of different tissues and cell lines. Probe synthesis was performed in the presence of ^{33}P dCTP, using oligo (dT) to prime reverse transcription. After hybridization, high stringency washing conditions were employed to remove non-specific hybrids from the array. The remaining signal, emanating from each gene target, was measured using a Phosphorimager. Gene expression was reported as Phosphor Stimulating Luminescence (PSL) which reflects the level of phosphor signal generated from the probe hybridized to each of the gene targets represented on the array. A local background signal subtraction was performed before the total signal generated from each array was used to normalize gene expression between the different hybridizations. The value presented after "[array code]:" represents the mean of the duplicate values, following background subtraction and probe normalization. One of skill in the art could routinely use this information to identify normal and/or diseased tissue(s) which show a predominant expression pattern of the corresponding polynucleotide of the invention or to identify polynucleotides which show predominant and/or specific tissue and/or cell expression.

Table 1B.1

Gene No:	cDNA Clone ID	Contig ID:	SEQ ID NO: X	ORF (From-To)	AA SEQ ID NO: Y	Predicted Epitopes	Cytologic Band	OMIM Disease Reference(s):
1	H2CBU83	884134	11	157 - 777	300	Pro-62 to Asp-67, Arg-74 to Gly-80, Gln-146 to Glu-168.	11p14-p13	102772, 106210, 106210, 106210, 106210, 107271, 114550, 115500, 136530, 151390, 179615, 179615, 179616, 180385, 194070, 194070, 194070, 245349, 602092
	H2CBU83	745366	189	157 - 312	478			
2	H6EDC19	543259	12	389 - 733	301	Arg-5 to Pro-12.		
3	HACBD91	637482	13	117 - 266	302		3q13.33	600882
4	HAGAQ26	561996	14	251 - 439	303		7q33	180105, 222800
5	HAGDS35	1352199	15	45 - 410	304	Leu-31 to Phe-38, Glu-47 to Trp-52.		
	HAGDS35	543617	190	52 - 405	479	Leu-31 to Phe-38, Glu-47 to Trp-52.		
6	HAIJAN23	1352364	16	109 - 1797	305	Pro-186 to Tyr-196, Leu-294 to Leu-300, Ser-380 to Thr-385, Thr-486 to Ser-499, Phe-513 to Ser-522.	5q12-q13	126060, 143200, 143200, 181510, 253200, 268800, 268800, 600354, 600354, 600354, 600887
	HAIJAN23	872551	191	120 - 629	480			
7	HAIJBR69	638516	17	262 - 423	306			
8	HAMFE15	905695	18	1495 - 2757	307	Leu-8 to Thr-16, Gly-93 to Ala-105, Arg-136 to Thr-142, Lys-195 to Gln-200, Lys-241 to His-247, Gly-255 to Gln-270, Gln-288 to Leu-293, Thr-316 to Asp-328,	7q34	180105, 222800, 274180

									Gly-348 to Pro-355, Asp-408 to Met-415.			
	HAMFE15	823350	192		226 - 369	481			Ser-39 to Asn-47.			
9	HAMGR28	892971	19		98 - 823	308			Ala-27 to Asp-34, Tyr-116 to Leu-125.			
	HAMGR28	748223	193		40 - 651	482			Ala-27 to Asp-34, Tyr-116 to Leu-125, Arg-185 to Cys-194.			
10	HAPOM49	769555	20		251 - 817	309			Gln-23 to Asp-30, Lys-66 to Cys-87.			
	HAPOM49	722386	194		448 - 816	483			Met-1 to Cys-21, Cys-41 to Asp-59, Pro-104 to His-116.			
11	HATBR65	635514	21		252 - 446	310			Ile-25 to Trp-30.			
12	HAUA183	639009	22		253 - 399	311		19	Asn-34 to Lys-42.			
	HAUA183	383592	195		575 - 643	484			Ala-17 to Lys-23.			
13	HBAMB15	671835	23		390 - 569	312					2p16	126600, 126600, 136435, 160980, 600678
14	HBGBA69	1352289	24		124 - 843	313			Pro-51 to Asp-56, Gly-95 to Thr-105, Val-132 to Ala-138, Pro-229 to Leu-240.			
	HBGBA69	709658	196		62 - 244	485			Thr-52 to Gly-57.			
15	HBIAE26	514418	25		75 - 194	314			Ser-22 to Lys-27.			
16	HBINS58	1352386	26		57 - 578	315		1	Gly-32 to Gly-37, Glu-78 to His-87, Tyr-102 to Ala-107, Pro-115 to Val-122, Lys-164 to Tyr-170.			
	HBINS58	961712	197		71 - 592	486			Gly-32 to Gly-37, Glu-78 to His-87, Tyr-102 to Ala-107, Pro-115 to Val-122.			

						Lys-164 to Gln-171.			
	HBINS58	892924	198	100 - 732	487	Gly-32 to Gly-37, Glu-78 to His-87, Tyr-102 to Ala-107, Pro-115 to Val-122.			
17	HBNAW17	526797	27	77 - 262	316				
18	HCE2F54	634016	28	166 - 1125	317	His-44 to Pro-50, Glu-90 to Glu-96, Gln-111 to Glu-117, Ser-143 to Gly-151, Ala-154 to Leu-166, Pro-199 to Ala-216, Gly-264 to Asp-272.	16q22.1	103850, 114835, 116800, 140100, 140100, 192090, 192090, 192090, 192090, 192090, 245900, 245900, 276600, 600223	
19	HCE3G69	728432	29	165 - 1175	318	Lys-50 to Asp-66, Pro-68 to Glu-77, Glu-102 to Glu-107, Glu-131 to Leu-146, Ala-175 to Glu-183, Phe-205 to Lys-216, Val-263 to Thr-281, Pro-304 to Ala-313.	2q36.1	120070, 120131, 120131, 138030, 259900	
	HCE3G69	494346	199	165 - 482	488	Lys-50 to Leu-69.			
20	HCE5F43	612796	30	113 - 931	319	Asn-23 to Ser-32, Trp-61 to Ser-68, Ala-130 to Ala-135, Thr-141 to Gly-148, Asn-176 to Gly-182, Pro-197 to Glu-205, His-211 to Glu-222, Gln-242 to Ile-248, Thr-265 to Leu-271.	10p13	601362	
21	HCEFB80	1143407	31	12 - 281	320	Met-1 to Ala-8, Ser-51 to Leu-62	22q13.33		

							Pro-70 to Lys-78.				
	HCEFB80	1046853	200		5 - 274	489	Met-1 to Ala-8.				
22	HCEWE20	543370	32		166 - 321	321	Ser-17 to Gln-22.				
23	HCGMD59	636078	33		438 - 662	322					
24	HCNDR47	1016919	34		21 - 401	323	Pro-71 to His-92.	1			
	HCNDR47	863677	201		124 - 507	490	Pro-71 to His-92.				
	HCNDR47	874128	202		603 - 632	491	Leu-1 to Thr-9.				
25	HCNSM70	637547	35		107 - 751	324	Met-1 to Ser-6.	11q24		600359, 602574, 602574	
	HCNSM70	589445	203		161 - 436	492	Met-1 to Ser-6.				
26	HCUIM65	550208	36		557 - 700	325					
27	HCWDS72	707833	37		19 - 318	326					
28	HCWKC15	553621	38		37 - 159	327	Lys-28 to Thr-34.				
29	HDHEB60	499233	39		568 - 894	328	Asp-48 to Ser-54.	11p11.2		133701, 168500, 171650, 176930, 176930, 600623, 600811, 600958	
30	HDPBA28	1062783	40		259 - 3084	329	Gln-33 to Trp-49, Gly-161 to Gly-172, Ile-207 to Arg-212, Asn-414 to Val-419, Val-423 to Gln-428, Val-436 to Gly-441, Lys-467 to Leu-478, Phe-497 to Ser-508, Met-550 to Gly-560, Glu-688 to Thr-697, Ile-711 to Gly-720, Ala-747 to Gly-759, Leu-785 to Phe-791, Ser-795 to Gln-800, Thr-808 to Lys-813, Ser-821 to Phe-832, Thr-879 to Glu-889, Leu-898 to Gln-904,	5q14.3			

	HDPBA28	866429	204	69 - 2894	493	Gln-934 to Met-941. Gln-33 to Trp-49, Gly-161 to Gly-172, Ile-207 to Arg-212, Asn-414 to Val-419, Val-423 to Gln-428, Val-436 to Gly-441, Lys-467 to Leu-478, Phe-497 to Ser-508, Met-550 to Gly-560, Glu-688 to Thr-697, Ile-711 to Gly-720, Ala-747 to Gly-759, Leu-785 to Phe-791, Ser-795 to Gln-800.		
31	HDPCL63	1019008	41	35 - 835	330	Ile-4 to Glu-10, Gly-58 to Asp-64.		
	HDPCL63	847045	205	260 - 733	494	Lys-72 to Cys-80, Leu-90 to Pro-96, Ala-110 to Thr-119, Glu-121 to Gly-128, Ser-140 to Lys-147.		
	HDPCL63	897484	206	605 - 961	495	Pro-8 to Gln-13, Thr-38 to Pro-46, Pro-100 to Met-108, Pro-113 to Pro-118.		
32	HDPCL63	460682	42	182 - 343	331	Pro-22 to His-33, Ser-42 to Trp-48.		
33	HDPFP29	628254	43	293 - 451	332			
34	HDPGT01	771583	44	8 - 271	333	Cys-65 to Ser-71.	16q22.1	103850, 114835, 116800, 140100, 140100, 192090, 192090, 192090, 192090, 192090, 245900, 245900, 276600, 600723

35	HDPHI51	460679	45	245 - 367	334	Gly-2 to Glu-7, Arg-27 to Gly-34.		
36	HDPIM30	879325	46	59 - 1633	335	Arg-15 to Val-22.	21q22.3	120220, 120240, 123580, 151385, 171860, 190685, 236100, 236200, 240300, 267750, 600065, 601072, 601145
37	HDPIM30	603517	207	259 - 438	496	Pro-41 to Ala-55.		
	HDPMM88	972734	47	100 - 2913	336	Met-1 to Ser-13, Ser-45 to Phe-51, Asn-103 to Lys-113, Phe-135 to Gly-140, Asp-165 to Pro-178, Ser-224 to Ala-229, Asn-283 to Arg-288, Asp-347 to Tyr-352, Thr-367 to Glu-372, Gly-420 to Thr-425, Glu-456 to Lys-462, Phe-466 to Asn-474, Glu-480 to Leu-485, Asp-673 to Asp-681, Gln-684 to Gly-689, Leu-841 to Gly-874, Gly-890 to Pro-900, Ser-902 to Ser-911, Leu-918 to Asp-924, Ser-930 to Val-935.		
	HDPMM88	906121	208	141 - 467	497	Ser-28 to Phe-34, Asn-86 to Tyr-93.		
	HDPMM88	902299	209	44 - 181	498			
	HDPMM88	885059	210	419 - 439	499			
	HDPMM88	874074	211	111 - 146	500			
	HDPMM88	854246	212	167 - 334	501			

	HDPMM88	854245	213	28 - 186	502	Ser-26 to Thr-31.		
38	HDPOJ08	731863	48	159 - 527	337	Lys-30 to Thr-35.	3q25.33	222900
39	HDPPN86	1037893	49	127 - 267	338			
	HDPPN86	895711	214	117 - 257	503			
40	HDPSB18	1043263	50	123 - 323	339	Lys-23 to Lys-31, Ala-38 to Ser-43.	10	
	HDPSB18	903816	215	116 - 307	504			
	HDPSB18	905414	216	1525 - 1566	505			
	HDPSB18	732097	217	345 - 665	506	Lys-57 to Gly-64.		
41	HDPSH53	1309174	51	158 - 430	340	Met-1 to Trp-6, Leu-22 to Thr-27, Pro-44 to Thr-63.		
	HDPSH53	1040056	218	153 - 536	507	Met-1 to Trp-6, Leu-22 to Thr-27, Pro-44 to Gly-58, Ala-61 to Glu-74, Pro-99 to Gly-111, Cys-121 to Ser-127.		
	HDPSH53	882768	219	212 - 484	508	Met-1 to Trp-6, Leu-22 to Thr-27.		
42	HDPSP01	1352280	52	184 - 2313	341	Gln-75 to Cys-80, Glu-97 to Lys-104, Glu-114 to Ala-119, Thr-177 to Gln-190, Asn-230 to Trp-240, Glu-269 to Arg-274, Pro-279 to Ala-286, Pro-323 to Cys-328, Asn-362 to Leu-367, Thr-390 to Arg-397, Leu-490 to Arg-495, Gln-556 to Leu-561.		

									Gln-657 to Val-674.			
		HDPSP01	689129	220	227 - 1153	509			Gln-75 to Cys-80.			
43		HDPSP54	744440	53	2356 - 2499	342			Pro-29 to Lys-37.	1q21.2		104770, 107670, 110700, 145001, 146760, 146790, 191315, 601412, 601652, 601863, 602491
		HDPSP54	502472	221	179 - 343	510						
44		HDPW68	812737	54	40 - 1440	343			Gly-12 to Tyr-26, Val-52 to Asp-59, Gln-88 to Asp-93, Arg-124 to Asn-129, His-193 to Arg-198, Gln-207 to Thr-213, Gln-338 to Arg-346, Ser-378 to Ala-384, Ser-413 to Arg-420, Ser-428 to Glu-434, His-443 to Ser-451, Glu-454 to Ser-461.			
45		HDPXY01	879048	55	23 - 319	344			Pro-39 to Trp-44.	17		
		HDPXY01	904768	222	33 - 329	511			Pro-39 to Trp-44.			
		HDPXY01	895716	223	539 - 607	512						
		HDPXY01	895715	224	1190 - 1267	513						
46		HDTBD53	972757	56	288 - 1385	345			Glu-91 to Arg-117, Lys-124 to Ser-136, Tyr-191 to Glu-200, Glu-265 to Lys-272.	3p25.1		193300, 193300, 227646
		HDTBD53	906342	225	292 - 1389	514			Glu-91 to Arg-117, Lys-124 to Ser-136.			
47		HDTBV77	785879	57	326 - 2149	346			Lys-5 to Lys-10, Asn-33 to Lys-39, Asp-48 to Lys-54, Pro-62 to Asp-67.	10p15.1		

							Asn-116 to Arg-123, His-157 to Ala-162, Val-242 to Lys-249, Val-251 to Asp-264.			
48	HDTQ23	1306984	58			132 - 302	347			
	HDTQ23	879009	226			148 - 471	515			
	HDTQ23	751707	227			148 - 369	516			
49	HE2DE47	619852	59			808 - 2427	348			
	HE2DE47	382025	228			515 - 757	517			
50	HE2NV57	740750	60			99 - 398	349			
51	HE2PH36	570903	61			28 - 228	350			
52	HE8DS15	847060	62			91 - 309	351		18	
53	HE9HY07	420063	63			35 - 160	352			
54	HEOMQ63	603533	64			123 - 266	353		20p12.1	
55	HEPAB80	1307790	65			73 - 438	354			
	HEPAB80	570048	229			67 - 435	518			
	HEPAB80	566712	66			199 - 549	355			
56	HFABH95	534142	67			232 - 492	356			
57	HFABH95	534142	67			232 - 492	356			

58	HFCEB37	411345	68	487 - 519	357				
59	HFFAD59	520369	69	44 - 181	358	Lys-13 to Asn-19, Asn-27 to Asn-35.	4q32-q34	189800, 208400, 231675	
60	HFGAD82	513669	70	1019 - 1135	359		Xp22.2	300075, 300077, 301200, 302350, 302801, 305435, 306000, 306000, 307800, 308800, 309510, 311200, 312040, 312170, 312700, 313400	
61	HFIUR10	532060	71	50 - 184	360	Gln-31 to Pro-39.			
62	HFTBM50	545012	72	158 - 262	361	Ala-19 to Lys-34.	4q12	103600, 103600, 103600, 104150, 104150, 104500, 164920, 164920, 164920, 170650, 609900	
63	HFTDZ36	545726	73	547 - 753	362		16q24.3	155555, 155555, 227650, 253000, 602783	
64	HFXBL33	778070	74	152 - 640	363				
65	HFXJX44	701988	75	98 - 241	364				
66	HFXKT05	658690	76	204 - 443	365	Leu-16 to Ser-23, Ser-38 to Pro-43, Gly-53 to Leu-60.	1p34.1	120550, 120570, 120575, 121800, 130500, 133200, 138140, 171760, 171760, 178300, 255800	
67	HGBHI35	570262	77	87 - 965	366	Pro-10 to Arg-15, Leu-96 to Ser-103, Gly-172 to Pro-178, Gln-213 to Asp-218, Asn-268 to Leu-275, Arg-282 to Phe-289.	1p32.2	120260, 138140, 178300	
68	HGLAF75	566838	78	231 - 596	367	Ser-40 to Gly-45, Leu-73 to Arg-80.			
69	HHENV10	562772	79	143 - 295	368	Asp-26 to Leu-36, Leu-42 to Phe-50.			
70	HHGCG53	340818	80	230 - 361	369		8		
71	HHGCM76	662329	81	270 - 536	370		17		
	HHGCM76	383547	230	270 - 302	519				
72	HHPEN62	695134	82	183 - 1709	371	Met-98 to Gln-107, Gly-120 to Gly-126,			

							Pro-138 to Trp-145, Leu-159 to Gly-169, Val-211 to Arg-217, Cys-256 to His-262, Glu-320 to Val-327, Phe-399 to Asn-406, Asp-444 to Ser-450, Asp-475 to Trp-488.				
73	HJABB94	456466	83	74 - 307	372		Ala-28 to His-41, Pro-43 to Gln-64.	13q14.12	180200, 180200, 180200, 600631		
74	HJACG30	895505	84	291 - 425	373		Thr-26 to Asn-39.	15.X			
	HJACG30	821341	231	50 - 439	520		Pro-57 to Pro-64.				
	HJACG30	774300	232	350 - 715	521		Lys-1 to Gly-8.				
75	HJBCY35	719729	85	232 - 1215	374		Glu-35 to His-41, Ser-62 to Ala-67, Pro-145 to Leu-155, Glu-157 to Ser-163, Arg-190 to Val-197, Asp-208 to Pro-215, Ser-247 to Pro-252.	7p22.3			
76	HJPAD75	651337	86	60 - 335	375		Pro-42 to Cys-50, Leu-61 to Ala-66.				
77	HKABZ65	862030	87	77 - 808	376		Ser-25 to Ala-31, Gln-146 to Ser-151, His-231 to Asn-236.				
	HKABZ65	665424	233	69 - 800	522		Ser-25 to Ala-31, Gln-146 to Ser-151, His-231 to Asn-236.				
78	HKACB56	554616	88	27 - 269	377		Tyr-39 to Lys-58.				
79	HKACD58	1352202	89	38 - 940	378		Thr-42 to Pro-53, Val-78 to Glu-86, Glu-103 to Met-112.				

							Ala-124 to Gly-131, Trp-158 to Glu-168, Gln-189 to Phe-210, Ala-221 to Gly-226, Arg-274 to Asp-284, Ala-294 to Gly-299.			
	HKACD58	552465	234	35 - 499	523		Thr-42 to Pro-53, Val-78 to Glu-86, Glu-103 to Met-112, Ala-124 to Gly-131.			
80	HKAEV06	1352263	90	501 - 1814	379		Thr-6 to Trp-13, Thr-75 to Gln-80, Thr-112 to Tyr-117, Leu-133 to Pro-138, Ala-146 to Phe-153, Gln-319 to Ser-325, Val-354 to His-372, Pro-391 to Gly-396, Val-405 to Thr-412, Ile-425 to Asp-437.			
	HKAEV06	638238	235	197 - 370	524		Thr-6 to Trp-13.			
81	HKAFT66	946512	91	508 - 831	380		Ser-51 to Thr-57.			
	HKAFT66	889258	236	508 - 831	525		Ser-51 to Thr-57.			
	HKAFT66	904790	237	234 - 347	526		Gln-23 to Asp-28.			
82	HKB1E57	876571	92	178 - 879	381		Ser-7 to Pro-14, Arg-47 to Arg-52, His-117 to Val-123, Glu-142 to Thr-149, Leu-162 to Ala-167, Gly-172 to Asn-177, Thr-226 to Ala-232.			
	HKB1E57	654871	238	30 - 170	527		Met-1 to Tyr-6.			

83	HKFBC53	1352286	93	64 - 1473	382	Thr-38 to Ala-44. Arg-52 to Ala-58, Thr-121 to Lys-126, Gly-156 to Gln-164, Gly-201 to Glu-215, Thr-432 to Gly-450, Glu-461 to Gly-466.			
	HKFBC53	701893	239	41 - 1369	528	Ala-28 to Ala-33, Arg-38 to Leu-48, Thr-120 to Lys-125, Gly-155 to Gln-163, Gly-200 to Glu-214.			
	HKFBC53	513190	240	3 - 929	529	Ala-1 to Gly-6, Ala-10 to Tyr-18.			
	HKFBC53	383426	241	3 - 731	530	Ala-1 to Gly-6, Ala-10 to Tyr-18.			
84	HKGDL36	877489	94	53 - 835	383	Pro-36 to Gly-42, Gly-54 to Arg-65, Ala-85 to Ala-91, Ala-95 to Gln-102, Ala-115 to Pro-121, Pro-166 to Asp-191, Lys-243 to Ala-249.	Xp11.23	300047, 300071, 300110, 300600, 301000, 301000, 301830, 309470, 309500, 309610, 309850, 311050, 312060	
	HKGDL36	704088	242	55 - 501	531	Pro-36 to Gly-42, Pro-64 to Ala-76, Gly-83 to Ala-90, Ser-100 to Cys-108, Thr-126 to Ser-135.			
85	HKISB57	625956	95	130 - 417	384	Ala-23 to Arg-36, His-38 to Ala-46, Pro-50 to Gly-56, Arg-85 to Val-94.	22q12.2	101000, 101000, 101000, 101000, 123620, 138981, 188826, 600850, 601669	

86	HKMLM11	514788	96	82 - 474	385	Ala-59 to Thr-68, Glu-72 to Ser-108, Glu-115 to Lys-126.			
87	HKMMW74	581399	97	202 - 327	386	Arg-28 to Gln-36.	15q23		
88	HLDON23	636083	98	368 - 709	387	Arg-122 to Ser-139, Met-144 to Glu-149.	5p15.2-p14.1	118485, 151670, 231680, 272800, 272800, 276700, 600374, 601780	
89	HLDQR62	753742	99	520 - 1005	388	Leu-68 to Lys-74, Tyr-109 to Lys-115, Gln-200 to Val-205, Lys-207 to Lys-214, Glu-237 to Ile-244, Ala-271 to Thr-279, Ser-317 to Ser-329, Gln-342 to Gly-348.	10q21-q22	126090, 129010, 142600, 154545, 250850, 601386, 601493	
90	HLDQU79	740755	100	99 - 1142	389	Leu-32 to His-38.			
91	HLHAL68	684216	101	30 - 164	390	Met-37 to Ser-43.			
92	HLIBD68	778073	102	186 - 338	391	Pro-55 to Gly-66, Phe-92 to Leu-103.			
93	HLICQ90	791828	103	249 - 869	392				
94	HLTHR66	699812	104	5 - 232	393				
95	HLTIP94	1087335	105	226 - 516	394	Gly-4 to Glu-9, Asp-22 to Cys-28, Glu-39 to Leu-44, Phe-88 to Phe-94.	17		
	HLTIP94	1035443	243	226 - 423	532	Gly-1 to Glu-8, Gly-37 to Gly-61, Gln-71 to Phe-81, Asp-95 to Gly-103, Leu-126 to Ile-131, Val-166 to Glu-171.			
	HLTIP94	1047690	244	3 - 899	533				

96	HLWAA17	629552	106	436 - 996	395	Lys-17 to Glu-27, Gln-40 to Gly-47.	1q21	104770, 107670, 110700, 135940, 145001, 146790, 152445, 152445, 159001, 174000, 179755, 182860, 182860, 182860, 191315, 230800, 230800, 266200, 600897, 601105, 601412, 601652, 602491
97	HLYAC95	778075	107	92 - 232	396			
98	HMADK33	561941	108	161 - 619	397	Gly-43 to Gly-55.	16p13	138760, 186580, 249100, 266600, 600760, 600760, 600761, 600761
99	HMAMI15	1352406	109	4 - 1023	398	Gly-33 to Lys-41, Pro-52 to Lys-60, Asn-81 to Ala-86, Lys-156 to Met-164, Gln-283 to Lys-292, Glu-303 to Gly-308.		
	HMAMI15	1049263	245	3 - 923	534	Gly-33 to Lys-41, Pro-52 to Lys-60, Asn-81 to Ala-86.		
100	HMCIFY13	635301	110	175 - 369	399			
101	HMDAB56	560676	111	273 - 407	400			
102	HMEED18	560775	112	34 - 699	401	Gln-85 to Lys-91, Pro-106 to Ser-117, Pro-124 to Ala-130, Trp-154 to Trp-160.		
103	HMEFT54	520307	113	332 - 451	402			
104	HMEGF92	520304	114	92 - 280	403	Ser-34 to Ser-39.		
105	HMSDL37	973996	115	531 - 725	404	Ser-31 to Lys-45, Pro-47 to Pro-53, Ser-58 to Arg-63.	3,3p	
	HMSDL37	895429	246	528 - 722	535	Ser-31 to Lys-45, Pro-47 to Pro-53, Ser-58 to Arg-63.		
	HMSDL37	904241	247	565 - 645	536			

	HMSDL37	750927	248	2 - 151	537			
106	HMSFI26	560229	116	120 - 308	405			
107	HMVBS81	639203	117	34 - 453	406		11q13	102200, 106100, 131100, 131100, 131100, 133780, 147050, 153700, 161015, 164009, 168461, 168461, 180721, 180840, 191181, 193235, 209901, 232600, 259700, 259770, 600045, 600319, 600528, 601884
108	HMWDC28	460487	118	124 - 252	407			
109	HMWFT65	562063	119	72 - 437	408			
110	HNEEE24	553558	120	213 - 428	409			
111	HNFFC43	753337	121	488 - 691	410	Asp-21 to Ser-29.	12q13.12	120140, 120140, 120140, 120140, 120140, 120140, 126337, 600808, 601284, 601769, 601769, 602116
112	HNFIY77	634551	122	228 - 929	411	Pro-47 to Met-53, Ser-130 to Ser-138.		
113	HNFIJF07	577013	123	86 - 286	412	Val-25 to Gly-33.		
114	HNGFR31	553552	124	108 - 380	413			
115	HNGI31	519120	125	135 - 245	414	Pro-18 to Glu-25.		
116	HNGJE50	561568	126	77 - 217	415			
117	HNGND37	839224	127	388 - 636	416	Asn-46 to Ser-54.		
118	HNGOI12	1041375	128	27 - 200	417	Met-1 to Gly-9.	11	
	HNGOI12	838184	249	27 - 200	538	Met-1 to Gly-9.		
	HNGOI12	839283	250	596 - 877	539			
119	HNHEU93	634851	129	57 - 302	418			
120	HNHEM14	664507	130	38 - 280	419	Glu-67 to Ala-74.	1	
121	HNHNB29	895462	131	40 - 201	420	Glu-17 to Lys-30, Val-43 to Asn-53.		
122	HNHOD46	843488	132	12 - 251	421			
123	HNTB126	1310821	133	28 - 990	422	Pro-56 to Pro-63, Met-92 to Thr-98, Ser-112 to Pro-120, Pro-162 to Glu-173,		

							Ala-200 to Ser-210, Lys-311 to Asn-320.			
	HNTBI26	796807	251	32 - 547	540	540	Pro-56 to Pro-63, Met-92 to Thr-98, Ser-112 to Pro-120, Pro-162 to Ser-169.			
	HNTBI26	590738	252	16 - 411	541	541	Pro-56 to Pro-63, Met-92 to Thr-98, Arg-107 to Pro-120.			
124	HNTBL27	545534	134	100 - 447	423	423	Arg-45 to Thr-52, Tyr-60 to Gly-66, Ala-87 to Trp-92, Leu-105 to Ser-115.	3p21.31		116806, 168468, 182280, 212138, 600163
125	HNTCE26	1160395	135	111 - 1316	424	424	Tyr-2 to Gly-15, Trp-192 to Asp-199, Lys-248 to Leu-253, Arg-330 to Lys-336, Gln-354 to Val-364, Val-383 to Ser-392.			
	HNTCE26	853373	253	57 - 422	542	542	Arg-75 to Lys-81, Gln-99 to Asp-109.			
126	HNTNI01	1352285	136	307 - 534	425	425	Lys-71 to Trp-76.			
	HNTNI01	699848	254	306 - 455	543	543				
127	HODDF13	684307	137	46 - 171	426	426	Thr-28 to Ser-40.			
128	HODDN92	422913	138	434 - 541	427	427				
129	HOFMQ33	1184465	139	49 - 1503	428	428	Leu-37 to Gly-44, Thr-137 to Leu-144, Ala-178 to Asn-184, Asp-194 to Val-201, Leu-252 to Glu-258, Asp-280 to Tyr-293, Asn-296 to Thr-301,			

							Asp-322 to Asp-348, Asn-363 to Ser-368, His-370 to Thr-378, Asn-380 to Cys-386, Glu-391 to Cys-399, Leu-421 to Arg-426, Glu-454 to Tyr-459.			
	HOFMQ33	919896	255	48 - 1502	544		Leu-37 to Gly-44, Pro-46 to Gly-51, Thr-137 to Leu-144, Ala-178 to Asn-184, Asp-194 to Val-201, Leu-252 to Glu-258, Asp-280 to Tyr-293, Asn-296 to Thr-301, Asp-322 to Asp-348, Asn-363 to Ser-368, His-370 to Thr-378, Asn-380 to Cys-386, Glu-391 to Cys-399, Leu-421 to Arg-426, Glu-454 to Tyr-459.			
	HOFMQ33	906694	256	78 - 875	545		Leu-37 to Gly-43.			
	HOFMQ33	902639	257	724 - 741	546					
	HOFMQ33	702186	258	123 - 374	547		Met-2 to Ser-9.			
130	HOFOC73	931871	140	18 - 407	429		Pro-22 to Cys-30, Gly-43 to Tyr-53, Ser-55 to Trp-65, Ala-76 to His-81, Pro-101 to Gly-108, Pro-121 to Gly-127.			
	HOFOC73	907073	259	23 - 226	548		Thr-47 to Pro-55.			
	HOFOC73	907072	260	127 - 171	549		Pro-1 to Val-7.			

	HOFOC73	878863	261	142 - 162	550			
131	HOQBJ82	1352356	141	361 - 852	430	Ser-30 to Met-36, Ile-38 to Pro-46, Gln-78 to Gly-88, Thr-98 to Pro-105, Gly-110 to Ser-122, Ser-136 to Trp-144.		
	HOQBJ82	858338	262	102 - 584	551	Ser-30 to Met-36, Ile-38 to Pro-46, Gln-78 to Gly-88, Thr-98 to Pro-105, Gly-110 to Ser-122.		
	HOQBJ82	857453	263	55 - 1029	552			
132	HOSBY40	589431	142	89 - 259	431			
133	HOSDJ25	854234	143	1076 - 1195	432	Gly-18 to Lys-23, Pro-31 to Gly-38.		
	HOSDJ25	566845	264	146 - 268	553	Gly-18 to Lys-23, Pro-31 to Gly-38.		
134	HPEAD79	520202	144	51 - 176	433	Lys-16 to Ser-21, Gly-36 to Asp-41.		
135	HPIBO15	1310868	145	128 - 763	434	Asp-40 to Glu-50, Ser-59 to Gly-69, Leu-109 to Lys-117, Tyr-130 to Leu-137, Leu-140 to Glu-160, Gly-202 to Tyr-208.		
	HPIBO15	590741	265	127 - 648	554	Asp-40 to Glu-50, Ser-59 to Gly-69, Ala-98 to His-105, Arg-108 to Glu-114, Pro-124 to Ser-138, Ala-143 to Gly-154.		

136	HPJBI33	685699	146	236 - 397	435	Arg-30 to Gln-36.		
137	HPJBK12	1011467	147	126 - 272	436		4,8	
	HPJBK12	525375	266	119 - 265	555			
	HPJBK12	796925	267	969 - 1001	556			
	HPJBK12	699587	268	509 - 523	557			
138	HPMDK28	846357	148	64 - 669	437	Ala-55 to Asn-60, Lys-65 to Met-71, Leu-75 to Asn-86, Asp-93 to Asp-110, Leu-130 to Cys-138, Gln-149 to Glu-154, Thr-172 to Ile-179, Glu-185 to Arg-192.	1p36.33	
	HPMDK28	639118	269	58 - 663	558	Ala-55 to Asn-60, Lys-65 to Met-71, Leu-75 to Asn-86, Asp-93 to Asp-110, Leu-130 to Cys-138, Gln-149 to Glu-154, Thr-172 to Ile-179, Glu-185 to Arg-192.		
139	HPRAL78	1352342	149	62 - 1321	438	Pro-31 to Thr-48, Arg-62 to Gly-70, Ala-74 to Glu-87, Lys-123 to Asp-129, Pro-162 to Gly-167, Glu-170 to Gly-189, Arg-220 to Asn-228, Glu-248 to Ala-258, Gly-285 to Gly-300, Pro-315 to Gly-327, Ser-406 to Arg-411.	3p25.2	193300, 193300, 227646

	HPRAL78	844216	270	70 - 1245	559	Pro-31 to Thr-48, Arg-62 to Gly-70, Ala-74 to Glu-87, Lys-123 to Asp-129, Pro-162 to Gly-167, Glu-170 to Gly-189, Arg-220 to Asn-228.		
	HPRAL78	484735	271	148 - 339	560	Ser-49 to Arg-54.		
140	HRABA80	882176	150	144 - 452	439	Ala-30 to Gly-36, Asp-45 to Trp-50, Lys-65 to Cys-71, Pro-80 to Cys-87.		
	HRABA80	588460	272	130 - 438	561	Ala-30 to Gly-36, Asp-45 to Trp-50, Lys-65 to Cys-71, Pro-80 to Cys-87.		
141	HRACD15	871221	151	252 - 410	440			
	HRACD15	706332	273	252 - 413	562			
142	HRACJ35	877666	152	132 - 1550	441	Arg-31 to Lys-37, Lys-58 to Glu-65, Asp-157 to Gly-168, Ile-219 to Gly-225, Ala-260 to Ser-268, Thr-276 to Glu-282.	8q22.2	148900, 216550
	HRACJ35	730504	274	99 - 1517	563	Arg-31 to Lys-37, Lys-58 to Glu-65, Asp-157 to Gly-168, Ile-219 to Gly-225, Ala-260 to Ser-268, Thr-276 to Glu-282.		
	HRACJ35	470546	275	1 - 534	564	Ile-9 to Gly-15, Ala-50 to Ser-58.		

143	HRGBL78	910133	153	30 - 1109	442	Thr-66 to Glu-72. Thr-48 to Arg-56, Pro-122 to Glu-127, Lys-135 to Cys-143, Ala-180 to Gly-185, Ala-230 to Tyr-238, Thr-244 to Gln-255, Pro-274 to Ser-279, Thr-284 to Phe-306, Leu-345 to Thr-354.	1	
	HRGBL78	904040	276	30 - 626	565	Thr-48 to Arg-56, Pro-122 to Glu-127, Ala-136 to Tyr-141.		
	HRGBL78	904621	277	11 - 19	566			
	HRGBL78	863802	278	1048 - 1146	567	Pro-24 to Arg-32.		
144	HROAJ39	1181699	154	10 - 1146	443	Ile-4 to Tyr-10, Arg-119 to Pro-126, Glu-152 to Gly-158, Thr-209 to Phe-215.	18q21.32	174810, 601567, 602080
	HROAJ39	1114849	279	31 - 879	568	Arg-40 to Pro-47, Glu-73 to Gly-79, Thr-130 to Phe-136, Lys-277 to Lys-283.		
	HROAJ39	1027712	280	247 - 1104	569	Arg-40 to Pro-47, Glu-73 to Gly-79, Thr-130 to Phe-136.		
145	HROBD68	827306	155	122 - 268	444	Thr-19 to Thr-25.		
146	HSAWD74	460527	156	142 - 570	445	Leu-51 to Gly-77, Ile-117 to Pro-125.	7	
	HSAWD74	371416	281	122 - 256	570	Thr-25 to Cys-30, Pro-35 to Arg-42.		
147	HSDEK49	1352253	157	60 - 1256	446	Val-29 to Val-37.	Xq12-q13.3	300011, 300011, 300011, 300127, 305450,

								Asp-71 to His-76, Gln-78 to Gly-84, Met-105 to His-110, Trp-117 to Asn-123, Lys-179 to Pro-187, Gly-218 to Asp-224, Leu-237 to Ala-243, Thr-256 to Asp-268, Ser-275 to Lys-280, Arg-308 to Glu-314, Glu-326 to Glu-332, Cys-343 to Asp-359.			309605, 313700, 313700, 313700, 313700, 313700, 313700, 314580
	HSDEK49	625998	282	126 - 1043	571			Val-29 to Val-37, Asp-71 to His-76, Gln-78 to Gly-84, Met-105 to His-110, Trp-117 to Gly-122, Gln-136 to Lys-141, Leu-143 to Ala-149, Thr-162 to Asp-174, Ser-181 to Lys-186, Arg-214 to Glu-220, Glu-232 to Glu-238, Cys-249 to Asp-265.			
148	HSDFI26	834619	158	99 - 767	447			Ala-21 to Glu-31, Thr-37 to Cys-43, Asp-62 to Ser-79, Lys-134 to Gly-146, Leu-164 to Met-169, Glu-171 to Lys-201.			
	HSDFI26	836071	283	99 - 317	572			Ala-21 to Glu-31, Thr-37 to Cys-43, Pro-64 to Asp-69.			

149	HSDSB09	1301498	159	16 - 423	448	Glu-33 to Glu-56, Thr-75 to Cys-81.		
	HSDSB09	463645	284	22 - 387	573	Glu-33 to Glu-56, Thr-75 to Cys-81.		
150	HSDSE75	545057	160	160 - 705	449	Tyr-15 to Leu-59, Ala-68 to Asp-85, Pro-87 to Asn-96, His-120 to Lys-129, Ser-153 to Gln-170.		
151	HSIDJ81	589447	161	8 - 184	450	Glu-37 to Gly-45.		
152	HSKDA27	1352409	162	786 - 3635	451	Gly-31 to Arg-36, Thr-55 to Glu-62, Ser-64 to Ser-79, Arg-87 to Asp-96, Arg-103 to Ala-109, Asp-120 to Arg-126, Gly-294 to Gly-302, Ser-305 to Ala-318, Val-320 to Arg-327, Pro-344 to Thr-351, Thr-383 to Thr-399, Leu-414 to Lys-435, Thr-449 to Ala-457, Gly-461 to Asn-479, Gly-483 to Gln-498, Ser-503 to Arg-514, Lys-532 to Ala-559, Leu-563 to Ser-611, Lys-632 to Tyr-638, Asn-667 to Lys-672, Leu-701 to Met-707, Ser-745 to Lys-755, Lys-761 to Leu-768,		

							Pro-787 to Trp-792, Lys-871 to Met-883, Pro-914 to Tyr-923, Ser-925 to Arg-939, Glu-942 to Tyr-950.				
HSKDA27	1074734	285	127 - 1653	574			Gly-31 to Arg-36, Thr-55 to Glu-62, Ser-64 to Ser-79, Arg-87 to Asp-96, Arg-103 to Ala-109, Asp-120 to Arg-126, Gly-294 to Gly-302, Ser-305 to Ala-318, Val-320 to Arg-327, Pro-342 to Thr-351, Thr-383 to Thr-399, Leu-414 to Lys-435, Thr-449 to Ala-457, Gly-461 to Asn-479, Gly-483 to Gln-498, Asn-504 to Val-509.				
HSKDA27	872570	286	12 - 1673	575			Gly-27 to Arg-32, Thr-51 to Glu-58, Ser-60 to Ser-75, Arg-83 to Asp-92, Arg-99 to Ala-105, Asp-116 to Arg-122, Gly-290 to Ala-314, Val-316 to Arg-323, Pro-338 to Arg-345, Thr-358 to His-375, Arg-403 to Ser-408, Ser-420 to Ser-436.				

153	HSKGN81	676075	163	353 - 1132	452	Thr-447 to Ala-455, Gly-459 to Asn-477, Gly-481 to Gln-496, Ser-501 to Arg-512, Lys-530 to Lys-554. Ile-60 to Asn-69, Leu-106 to Asp-112, Glu-130 to Gly-136, Phe-160 to Glu-167, Pro-184 to Cys-190, Glu-197 to Ser-202, Arg-215 to Glu-221, Thr-237 to Pro-242.	22q13.2	188826	
	HSKGN81	409905	287	537 - 608	576	Thr-11 to Pro-22.			
154	HSNAD72	467397	164	220 - 327	453				
155	HSNMC45	1352201	165	225 - 389	454	Glu-23 to Asn-31, Thr-38 to Gly-48.			
	HSNMC45	545060	288	232 - 309	577				
156	HSQFP66	460537	166	96 - 332	455	Ser-6 to Arg-15.			
157	HSRFPZ57	892171	167	82 - 207	456				
158	HSUBW09	413246	168	153 - 323	457	Asp-23 to Gly-29.			
159	HSVBU91	596868	169	256 - 528	458	Asp-26 to Asn-31, Ser-37 to His-49, Ala-65 to Ser-73.	7q11.23	116860, 129900, 233700, 600079	
160	HTAEE28	1018291	170	319 - 1167	459	Pro-255 to Leu-264.			
	HTAEE28	882919	289	372 - 737	578				
	HTAEE28	864120	290	124 - 771	579				
161	HTECC05	1352365	171	13 - 546	460	Gly-41 to Leu-46, Asp-67 to Thr-75, Ile-114 to Gly-122, Pro-156 to Trp-161.			
	HTECC05	877448	291	21 - 404	580	Gly-41 to Leu-46.			

							Asp-67 to Thr-75, Ile-114 to Pro-127.			
	HTECC05	666743	292	27 - 518	581		Gly-41 to Leu-46, Asp-67 to Thr-75, Ile-114 to Ala-123.			
162	HTEEB42	206980	172	59 - 952	461		Met-1 to His-7.	21q21.2		
163	HTEFU65	543396	173	231 - 371	462		Gly-35 to Gly-40.			
164	HTELP17	836072	174	164 - 298	463			3p12-p11.1	164500, 176880, 232500, 600151, 600795	
165	HTELS08	847090	175	15 - 491	464		Pro-98 to Gln-106.			
166	HTLEP53	634852	176	73 - 378	465		Ser-33 to Lys-43.			
167	HTPCS72	854941	177	2365 - 2577	466			1q23.1	107300, 131210, 136132, 145001, 173610, 601652	
	HTPCS72	566683	293	530 - 745	582					
168	HTPIH83	919916	178	118 - 810	467		Ser-29 to Ser-34, Ser-186 to Asp-196, Arg-206 to Ser-225.	Xq22.3-23	300046, 300067, 300067, 300121, 300121, 301201, 301835, 311850	
	HTPIH83	895024	294	111 - 530	583		Ser-29 to Ser-34.			
	HTPIH83	898088	295	96 - 353	584					
169	HTSEW17	460579	179	170 - 283	468					
170	HTTB176	637725	180	133 - 534	469		Glu-55 to Arg-61, Gln-84 to Ser-92, Ser-99 to Ser-104.			
171	HTTBS64	1008159	181	95 - 223	470		Leu-37 to Asn-42.			
	HTTBS64	863187	296	100 - 228	585		Leu-37 to Asn-42.			
	HTTBS64	754125	297	175 - 402	586		Lys-41 to Arg-46.			
172	HTXJM03	603918	182	328 - 498	471		Asp-51 to His-56.			
173	HTXON32	838288	183	72 - 230	472		Ala-45 to Gly-50.			
174	HUFCJ30	638402	184	123 - 275	473		Pro-31 to Ala-37.			
175	HUVEB53	571200	185	14 - 151	474			20p12	112261, 176640, 176640, 176640, 236700, 601920	
176	HWAAD63	838626	186	322 - 825	475		Pro-53 to Trp-61.			
	HWAAD63	833089	298	322 - 483	587					

	HWAAD63	793875	299	312 - 818	588				
177	HWADJ89	799506	187	581 - 709	476			lp36.31- p36.11	120550, 120570, 120575, 130500, 133200, 600975
178	HWBFX31	799427	188	271 - 426	477				

Table 1B.2

Gene No:	cDNA Clone ID	Contig ID:SEQ ID NO:X	Tissue Distribution Library Code:Count (see Table 4 for Library Codes)
1	H2CBU83	884134	11
			AR182:8, AR314:7, AR271:7, AR280:6, AR315:6, AR216:6, AR052:6, AR224:6, AR225:5, AR164:5, AR215:5, AR270:5, AR165:5, AR162:5, AR310:5, AR245:5, AR166:5, AR161:5, AR169:5, AR223:5, AR266:5, AR172:5, AR039:5, AR192:5, AR163:4, AR193:4, AR207:4, AR176:4, AR269:4, AR175:4, AR226:4, AR243:4, AR217:4, AR273:4, AR168:4, AR282:4, AR204:4, AR291:4, AR265:4, AR183:4, AR274:4, AR299:4, AR214:4, AR205:4, AR194:4, AR060:4, AR272:4, AR238:4, AR186:4, AR222:4, AR053:4, AR197:4, AR089:3, AR257:3, AR295:3, AR289:3, AR311:3, AR221:3, AR171:3, AR191:3, AR250:3, AR235:3, AR252:3, AR275:3, AR309:3, AR177:3, AR180:3, AR173:3, AR178:3, AR246:3, AR312:3, AR188:3, AR292:3, AR298:3, AR284:3, AR212:3, AR201:3, AR285:3, AR189:3, AR296:3, AR181:3, AR300:3, AR185:3, AR253:3, AR202:3, AR281:3, AR237:3, AR184:3, AR268:3, AR233:3, AR286:3, AR232:3, AR308:3, AR277:3, AR267:3, AR228:3, AR288:3, AR316:3, AR239:3, AR195:2, AR242:2, AR263:2, AR033:2, AR287:2, AR196:2, AR210:2, AR259:2, AR174:2, AR294:2, AR096:2, AR234:2, AR293:2, AR290:2, AR190:2, AR255:2, AR055:2, AR213:2, AR264:2, AR231:2, AR313:2, AR297:2, AR258:2, AR170:2, AR218:2, AR247:2, AR061:2, AR236:2, AR219:2, AR198:2, AR230:2, AR254:2, AR256:2, AR261:2, AR104:2, AR240:2, AR262:2, AR283:2, AR229:2, AR227:2, AR260:2, AR200:1, AR203:1, AR179:1, AR244:1, AR199:1, S0414:9, S0422:7, L0662:7, S0444:6, L0748:4, L0581:4, S0442:3, H0031:3, L0666:3, L0754:3, H0656:2, S0358:2, S0360:2, H0013:2, S0438:2, S0440:2, L0598:2, L0803:2, L0540:2, L0756:2, L0752:2, L0758:2, L0759:2, S0242:2, H0624:1, S0282:1, H0742:1, H0393:1, H0586:1, H0574:1, H0036:1, H0004:1, T0103:1, T0110:1, H0571:1, H0569:1, H0123:1, L0471:1, H0594:1, S6028:1, H0622:1, UNKWN:1, L0649:1, L0381:1, L0776:1, L0659:1, L0528:1, L0792:1, L0793:1, L0663:1, L0664:1, L0665:1, L2257:1, H0144:1, S0374:1, H0547:1, H0593:1, H0690:1, H0670:1, H0648:1, H0672:1, H0651:1, H0539:1, S0378:1, S0380:1, H0521:1, S0406:1, H0555:1, H0478:1, L0744:1, L0731:1 and S0276:1.
	H2CBU83	745366	189
2	H6EDC19	543259	12

3	HACBD91	637482	13	<p>AR285:7, AR253:7, AR060:7, AR204:7, AR183:7, AR266:7, AR268:6, AR240:6, AR180:6, AR312:6, AR246:6, AR192:6, AR199:6, AR055:6, AR316:6, AR247:6, AR272:6, AR178:6, AR193:6, AR233:6, AR299:6, AR212:6, AR228:6, AR275:5, AR293:5, AR096:5, AR313:5, AR291:5, AR179:5, AR238:5, AR033:5, AR182:5, AR286:5, AR237:5, AR231:5, AR308:5, AR274:5, AR185:5, AR250:5, AR205:5, AR270:5, AR104:5, AR255:5, AR218:5, AR175:5, AR190:4, AR061:4, AR219:4, AR191:4, AR262:4, AR203:4, AR217:4, AR213:4, AR174:4, AR267:4, AR243:4, AR039:4, AR230:4, AR033:4, AR188:4, AR311:4, AR232:4, AR234:4, AR254:4, AR300:4, AR189:4, AR168:4, AR214:4, AR207:3, AR227:3, AR277:3, AR173:3, AR294:3, AR211:3, AR258:3, AR256:3, AR170:3, AR282:3, AR171:3, AR200:3, AR253:3, AR223:3, AR290:3, AR260:2, AR224:2, AR216:2, AR210:2, AR172:2, AR215:1, AR169:1 L0805:4, H0559:3, L0803:3, H0545:2, L0664:2, L0748:2, L0777:2, L0758:2, L3643:1, H0295:1, H0657:1, S0444:1, H0734:1, H0550:1, S0222:1, T0048:1, H0318:1, H0052:1, H0231:1, H0041:1, H0620:1, H0606:1, H0316:1, H0077:1, L0769:1, L0761:1, L0766:1, L0774:1, L0789:1, H0672:1, H0539:1, S0146:1, L0751:1, L0780:1, L0731:1, S0434:1 and S0196:1.</p> <p>AR055:116, AR283:103, AR060:91, AR089:55, AR235:53, AR299:52, AR185:51, AR104:49, AR096:34, AR039:30, AR282:30, AR316:29, AR261:29, AR196:24, AR218:23, AR219:21, AR272:20, AR300:20, AR313:19, AR277:19, AR240:19, AR309:17, AR236:17, AR295:16, AR252:15, AR271:15, AR191:15, AR285:14, AR246:13, AR165:13, AR291:13, AR264:13, AR311:13, AR164:13, AR166:13, AR308:12, AR275:12, AR174:12, AR287:11, AR263:11, AR286:11, AR177:11, AR161:10, AR162:10, AR200:10, AR201:10, AR163:10, AR195:10, AR262:10, AR188:10, AR207:10, AR288:10, AR267:10, AR197:9, AR181:9, AR266:9, AR312:9, AR227:9, AR257:9, AR175:9, AR289:9, AR232:9, AR189:8, AR297:8, AR053:8, AR033:8, AR190:8, AR245:8, AR296:8, AR193:8, AR258:8, AR255:8, AR239:7, AR260:7, AR173:7, AR198:7, AR293:7, AR199:7, AR250:7, AR243:6, AR247:6, AR274:6, AR211:6, AR205:6, AR203:6, AR213:6, AR178:6, AR226:5, AR256:5, AR231:5, AR294:5, AR270:5, AR204:5, AR176:5, AR238:5, AR210:5, AR230:4, AR237:4, AR253:4, AR170:4, AR212:4, AR061:4, AR183:4, AR242:4, AR254:3, AR169:3, AR182:3, AR290:3, AR268:3, AR179:3, AR217:3, AR221:2, AR216:2, AR168:2, AR224:2, AR229:2, AR214:2, AR223:1, AR228:1, AR172:1, AR192:1 L0748:8, L0439:4, L0749:3, H0171:2, L3659:2, L0438:2, S024:1, S0360:1, H0640:1, S0278:1, L3655:1, S0280:1, H0012:1, L0055:1, H0032:1, H0647:1, L0807:1, L0665:1, H0659:1, L0355:1, S0328:1, H0754:1, H0710:1, L0756:1, L0780:1, L0759:1, S0260:1, S0452:1 and H0721:1.</p>
4	HAGAQ26	561996	14	<p>AR242:9, AR192:9, AR162:8, AR161:8, AR197:8, AR163:8, AR198:7, AR204:7, AR176:7, AR201:7, AR165:7, AR089:6, AR164:6, AR166:6, AR232:6, AR269:6, AR180:6, AR207:6, AR182:6, AR250:6, AR271:5, AR173:5, AR243:5, AR291:5, AR229:5, AR212:5, AR312:5, AR295:5, AR272:5, AR288:5, AR268:5, AR313:5, AR205:5, AR178:5, AR193:5, AR053:5, AR264:5, AR175:5, AR239:5, AR293:5, AR060:5, AR263:5, AR246:5, AR270:4, AR235:4, AR195:4, AR181:4, AR096:4, AR267:4, AR238:4, AR183:4, AR218:4, AR309:4, AR213:4, AR228:4, AR289:4, AR285:4, AR104:4, AR290:4, AR311:4, AR231:4, AR237:4, AR174:4, AR296:4, AR266:4, AR211:4, AR316:4, AR297:4, AR177:3, AR226:3, AR230:3, AR308:3, AR287:3, AR233:3, AR179:3, AR219:3, AR185:3, AR286:3, AR055:3, AR294:3, AR240:3, AR247:3, AR169:3, AR253:3, AR224:3, AR275:3, AR215:3, AR282:3, AR274:3, AR232:3, AR227:3, AR061:3, AR039:2, AR234:2, AR168:2, AR300:2, AR260:2, AR256:2, AR033:2, AR236:2, AR200:2, AR189:2, AR210:2, AR238:2, AR214:2, AR277:2, AR299:2, AR199:2, AR190:2, AR261:1, AR172:1, AR262:1, AR257:1, AR191:1, AR216:1 L0603:4, H0031:3, S0010:2, T0010:2, H0644:2, L0438:2, H0038:1, H0616:1, H0264:1, S0426:1, H0539:1, L0439:1 and S0260:1.</p>
5	HAGDS35	1352199	15	<p>AR089:13, AR299:12, AR060:11, AR096:8, AR055:7, AR039:7, AR185:7, AR283:6, AR313:6, AR316:5, AR309:5,</p>

				AR282:4, AR263:4, AR240:4, AR250:4, AR218:4, AR300:4, AR161:4, AR162:4, AR104:4, AR196:4, AR163:4, AR274:3, AR297:3, AR277:3, AR296:3, AR308:3, AR293:3, AR175:3, AR287:3, AR221:3, AR251:3, AR291:3, AR165:3, AR262:3, AR285:3, AR193:3, AR166:3, AR197:3, AR169:3, AR203:3, AR254:3, AR200:3, AR164:2, AR053:2, AR294:2, AR243:2, AR198:2, AR295:2, AR229:2, AR176:2, AR174:2, AR188:2, AR269:2, AR312:2, AR231:2, AR182:2, AR033:2, AR219:2, AR255:2, AR225:2, AR311:2, AR268:2, AR201:2, AR189:2, AR288:2, AR272:2, AR226:2, AR183:2, AR181:2, AR191:2, AR261:2, AR258:2, AR212:2, AR190:2, AR224:2, AR179:1, AR210:1, AR239:1, AR178:1, AR204:1, AR195:1, AR275:1, AR177:1, AR264:1, AR234:1, AR247:1, AR267:1, AR168:1, AR233:1, AR290:1, AR286:1, AR228:1, AR217:1, L0748:8, L0777:5, H0013:3, S0356:2, H0622:2, L0794:2, L0803:2, L0665:2, L0438:2, H0436:2, L0743:2, L0740:2, H0170:1, S0354:1, S0376:1, H0749:1, H0586:1, S0010:1, S6028:1, H0188:1, H0616:1, S0422:1, L0764:1, L0521:1, L0804:1, L0774:1, L0776:1, L0655:1, L0659:1, L5623:1, H0520:1, H0435:1, L0439:1, L0754:1, L0747:1, L0779:1, L0758:1, L0759:1, S0026:1, H0543:1 and H0423:1.
	HAGDS35	543617	190	
6	HAJAN23	1352364	16	AR192:7, AR169:6, AR207:6, AR170:6, AR168:5, AR214:5, AR161:5, AR162:5, AR165:5, AR172:5, AR163:5, AR223:5, AR311:5, AR195:5, AR164:5, AR166:5, AR196:5, AR224:4, AR171:4, AR217:4, AR264:4, AR308:4, AR216:4, AR277:4, AR282:4, AR271:4, AR291:4, AR213:4, AR197:4, AR193:3, AR235:3, AR309:3, AR212:3, AR205:3, AR283:3, AR250:3, AR253:3, AR261:3, AR225:3, AR188:3, AR089:3, AR245:3, AR316:3, AR312:3, AR299:3, AR215:3, AR177:3, AR055:3, AR247:3, AR268:2, AR295:2, AR288:2, AR221:2, AR313:2, AR199:2, AR262:2, AR033:2, AR230:2, AR285:2, AR039:2, AR297:2, AR229:2, AR198:2, AR300:2, AR257:2, AR286:2, AR287:2, AR104:2, AR274:2, AR060:2, AR173:2, AR246:2, AR272:2, AR096:2, AR227:2, AR232:2, AR237:2, AR176:2, AR182:2, AR226:2, AR185:2, AR238:2, AR266:2, AR181:2, AR240:2, AR231:2, AR211:2, AR258:2, AR289:2, AR191:2, AR239:2, AR175:1, AR189:1, AR270:1, AR219:1, AR234:1, AR061:1, AR183:1, AR200:1, AR263:1, AR203:1, AR228:1, AR236:1, AR296:1, AR201:1, AR210:1, S0408:2, H0619:2, S0438:2, L0803:2, L0804:2, L3643:1, H0686:1, H0650:1, H0730:1, T0110:1, H0233:1, S0003:1, H0674:1, H0623:1, H0561:1, H0509:1, S0422:1, L0770:1, L0766:1, L0518:1, L5622:1, S0374:1, H0593:1, H0555:1, L0748:1 and L0755:1.
	HAJAN23	872551	191	
7	HAJBR69	638516	17	AR309:4, AR242:3, AR217:3, AR235:3, AR225:3, AR170:2, AR252:2, AR263:2, AR180:2, AR171:2, AR282:2, AR221:2, AR197:2, AR200:2, AR196:2, AR308:2, AR277:2, AR165:1, AR164:1, AR215:1, AR192:1, AR166:1, AR268:1, AR168:1, AR211:1, AR207:1, AR283:1, AR216:1, AR204:1, AR311:1, AR240:1, AR182:1, S0040:4, T0010:4, H0560:4, L0794:4, S0420:3, L0455:3, L3905:3, H0656:2, S0212:2, H0619:2, H0497:2, H0052:2, H0012:2, H0429:2, L0766:2, L5623:2, L0439:2, H0665:2, H0556:1, H0717:1, H0650:1, S0418:1, H0580:1, H0728:1, H0735:1, H0734:1, H0370:1, H0392:1, H0333:1, H0013:1, H0635:1, H0505:1, H0581:1, H0569:1, H0050:1, H0373:1, S0250:1, S0022:1, H0553:1, L0370:1, H0561:1, L2263:1, L2261:1, H0520:1, H0593:1, S0126:1, H0435:1, H0518:1, H0521:1, H0626:1, L0748:1, S0436:1, L0591:1, H0542:1, S0424:1 and H0677:1.
	HAMFE15	905695	18	AR235:3, AR275:3, AR221:3, AR282:2, AR207:2, AR291:2, AR180:2, AR286:2, AR173:2, AR178:2, AR225:2, AR243:2, AR272:1, AR176:1, AR181:1, AR163:1, AR161:1, AR285:1, AR168:1, AR257:1, AR277:1, AR261:1, AR191:1, AR311:1, AR196:1, AR216:1, AR296:1, AR297:1, AR269:1, AR169:1, AR266:1, AR247:1, AR199:1, AR175:1, L0748:10, L0754:9, L0731:9, L0766:8, L0439:7, L0803:6, H0624:5, L0759:5, S0356:4, H0486:4, H0090:4, L0789:4, L0438:4, L0740:4, L0749:4,

				L0756:4, L0777:4, L0599:4, S0360:3, H0013:3, S0003:3, L0369:3, L0794:3, L0659:3, L0809:3, L0665:3, H0539:3, L0362:3, S0114:2, S0358:2, S0278:2, H0441:2, H0586:2, H0333:2, H0581:2, H0328:2, H0553:2, H0529:2, L0770:2, L0662:2, L0804:2, L0666:2, L0663:2, H0547:2, H0519:2, H0659:2, H0670:2, S0330:2, L0750:2, L0755:2, L0758:2, L0589:2, L0592:2, L0581:2, L0593:2, S0276:2, S0424:2, H0170:1, H0171:1, S0040:1, S0116:1, H0664:1, H0458:1, H0638:1, H0192:1, S0418:1, S0354:1, S0410:1, H0580:1, S0046:1, H0393:1, L0717:1, H0411:1, S0622:1, S0222:1, H0587:1, T0114:1, L0021:1, H0318:1, H0421:1, H0052:1, H0251:1, H0544:1, H0572:1, H0566:1, L0471:1, H0057:1, H0051:1, H0510:1, S0628:1, H0271:1, S0334:1, H0622:1, S0368:1, H0031:1, L0142:1, H0032:1, H0124:1, H0316:1, H0591:1, H0616:1, L0060:1, H0551:1, H0264:1, H0412:1, H0413:1, L0564:1, H0560:1, S0150:1, H0646:1, S0144:1, H0538:1, L0598:1, L0638:1, L0372:1, L0764:1, L0771:1, L0521:1, L0650:1, L0805:1, L0655:1, L0656:1, L0664:1, H0144:1, S0374:1, H0691:1, H0520:1, H0689:1, H0658:1, H0672:1, S0152:1, S0332:1, H0521:1, H0134:1, H0631:1, S0206:1, L0751:1, L0779:1, L0753:1, H0445:1, S0394:1, L0608:1, S0026:1, H0653:1, H0665:1, S0242:1, S0194:1, H0542:1, H0423:1 and H0422:1.
	HAMFE15	823350	192	
9	HAMGR28	892971	19	AR271:8, AR184:7, AR060:7, AR240:6, AR089:6, AR219:5, AR104:5, AR183:5, AR282:5, AR052:5, AR275:5, AR266:5, AR316:5, AR274:5, AR249:5, AR192:4, AR053:4, AR267:4, AR096:4, AR247:4, AR309:4, AR312:4, AR283:4, AR248:4, AR253:4, AR186:4, AR182:4, AR185:4, AR238:4, AR299:4, AR310:3, AR289:3, AR285:3, AR313:3, AR213:3, AR218:3, AR291:3, AR241:3, AR039:3, AR251:3, AR286:3, AR033:3, AR256:3, AR061:3, AR292:3, AR234:3, AR238:3, AR202:3, AR231:3, AR268:3, AR295:3, AR294:3, AR293:3, AR300:3, AR055:3, AR243:3, AR315:3, AR198:2, AR296:2, AR270:2, AR284:2, AR259:2, AR298:2, AR290:2, AR226:2, AR237:2, AR233:2, AR273:2, AR269:2, AR229:2, AR206:2, AR232:2, AR227:1, AR314:1, AR179:1, AR175:1, L0666:1, H0046:9, H0556:5, L0809:5, L0747:4, L0770:3, L0769:3, L0783:3, H0520:3, L0439:3, L0731:3, H0664:2, S0045:2, H0123:2, H0424:2, L0637:2, L0775:2, S0328:2, S0146:2, L0777:2, L0601:2, H0542:2, L0411:1, H0265:1, H0740:1, H0294:1, H0583:1, H0650:1, H0662:1, S0420:1, S0444:1, H0637:1, H0735:1, S0476:1, S0278:1, H0370:1, H0586:1, H0587:1, H0497:1, H0486:1, H0013:1, H0069:1, H0575:1, H0253:1, H0581:1, H0251:1, H0150:1, T0010:1, H0083:1, H0239:1, H0594:1, H0288:1, H0290:1, H0604:1, H0553:1, H0040:1, H0087:1, H0494:1, H0560:1, L0065:1, S0438:1, S0440:1, H0641:1, H0633:1, H0646:1, L3815:1, S0422:1, S0002:1, H0529:1, L0763:1, L0646:1, L0800:1, L0764:1, L0767:1, L0649:1, L0803:1, L0806:1, L0653:1, L0659:1, L0518:1, L0789:1, L0791:1, S0053:1, H0144:1, H0701:1, H0725:1, S0148:1, L0438:1, H0519:1, H0593:1, S0406:1, L0748:1, L0745:1, L0749:1, L0750:1, L0779:1, L0752:1, L0758:1, S0031:1, S0436:1, S0460:1 and L0600:1.
	HAMGR28	748223	193	
10	HAPOM49	769555	20	AR089:5, AR169:5, AR060:5, AR282:4, AR283:4, AR055:3, AR218:3, AR096:3, AR171:3, AR104:3, AR277:3, AR313:3, AR217:3, AR039:2, AR240:2, AR316:2, AR221:2, AR163:2, AR180:2, AR183:2, AR170:2, AR172:2, AR165:2, AR299:2, AR166:2, AR242:2, AR195:2, AR168:2, AR300:2, AR275:2, AR162:2, AR164:1, AR216:1, AR193:1, AR205:1, AR264:1, AR185:1, AR173:1, AR266:1, AR161:1, AR272:1, AR214:1, AR257:1, AR196:1, AR270:1, AR268:1, AR289:1, AR245:1, AR312:1, AR223:1, AR212:1, AR261:1, AR219:1, AR297:1, AR192:1, S0406:5, L0750:5, L0777:4, L0749:3, L0779:3, H0662:2, S0440:2, L0770:2, L0794:2, L0762:2, L0657:2, L0783:2, L0740:2, L0747:2, L0780:2, S0420:1, S0442:1, S0444:1, S0045:1, L3316:1, H0599:1, H0575:1, S0474:1, T0115:1, H0083:1, H0510:1, H0644:1, H0551:1, S0386:1, H0494:1, H0561:1, H0538:1, S0422:1, L0646:1, L0804:1, L0774:1, L0809:1, L0530:1, L0663:1, L0664:1, L0665:1, H0593:1, S0380:1, S0027:1, H0538:1, S0422:1, L0646:1, L0804:1, L0774:1, L0809:1, L0530:1, L0663:1, L0664:1, L0665:1, H0593:1, S0380:1, S0027:1.

				L0748:1, L0439:1, L0756:1, L0755:1, L0758:1, L0485:1, H0542:1 and H0423:1.
	HAPOM49	722386	194	
11	HATBR65	635514	21	AR313:46, AR173:29, AR258:29, AR096:29, AR229:29, AR300:26, AR218:26, AR240:26, AR247:26, AR214:26, AR196:24, AR223:23, AR175:23, AR257:22, AR174:22, AR178:22, AR165:21, AR217:21, AR162:21, AR183:21, AR161:21, AR089:21, AR293:20, AR163:20, AR264:20, AR164:20, AR033:20, AR309:20, AR216:19, AR181:19, AR262:19, AR166:19, AR185:19, AR299:19, AR180:18, AR312:18, AR179:18, AR238:18, AR290:18, AR297:18, AR189:18, AR269:17, AR270:17, AR199:17, AR294:17, AR261:16, AR224:16, AR191:16, AR316:16, AR285:16, AR225:16, AR203:16, AR235:15, AR182:15, AR263:15, AR219:15, AR177:15, AR212:15, AR274:14, AR236:14, AR226:14, AR234:14, AR053:14, AR231:14, AR287:14, AR233:14, AR296:14, AR275:14, AR176:14, AR193:14, AR171:13, AR286:13, AR282:13, AR267:13, AR255:13, AR210:13, AR268:13, AR308:13, AR190:13, AR060:13, AR291:13, AR222:13, AR260:13, AR200:12, AR104:12, AR211:12, AR237:12, AR295:11, AR266:11, AR252:11, AR213:11, AR168:11, AR288:11, AR254:11, AR215:11, AR228:11, AR221:10, AR272:10, AR230:10, AR250:10, AR204:10, AR039:10, AR242:10, AR239:9, AR245:9, AR289:9, AR195:9, AR256:9, AR170:9, AR169:9, AR172:9, AR283:9, AR201:7, AR232:6, AR207:6, AR061:5, AR055:5, L0534:4, L0527:3, H0254:2, S0045:2, AR243:7, AR253:7, AR205:8, AR208:8, AR277:8, AR271:8, AR311:8, AR192:8, AR197:8, H0156:2, L0589:2, H0255:1, H0402:1, L0539:1, T0060:1, H0328:1, H0615:1, H0598:1, H0264:1, L0766:1, L0493:1, L0666:1, S0052:1, H0539:1, L0747:1, L0752:1 and L0366:1.
12	HAUAI83	639009	22	H0294:2
	HAUAI83	383592	195	
13	HBA MB15	671835	23	AR245:4, AR213:3, AR176:3, AR224:3, AR252:3, AR168:3, AR165:2, AR164:2, AR183:2, AR197:2, AR204:2, AR238:2, AR266:2, AR282:2, AR162:2, AR171:2, AR271:2, AR289:2, AR270:2, AR291:2, AR205:2, AR274:2, AR096:2, AR268:2, AR297:2, AR296:2, AR225:2, AR161:1, AR311:1, AR192:1, AR269:1, AR261:1, AR179:1, AR182:1, AR234:1, AR191:1, AR277:1, AR181:1, AR237:1, AR313:1, AR300:1, AR089:1, H0410:1, H0530:1, H0328:1, L0455:1 and L0740:1.
14	HGBA69	1352289	24	AR196:22, AR089:21, AR275:21, AR188:20, AR240:19, AR096:19, AR177:18, AR060:18, AR104:18, AR282:18, AR269:17, AR238:17, AR195:17, AR176:17, AR189:16, AR199:15, AR283:15, AR185:15, AR183:15, AR244:15, AR218:15, AR219:15, AR186:14, AR299:14, AR248:14, AR247:14, AR211:14, AR197:14, AR173:14, AR254:14, AR174:14, AR268:14, AR310:13, AR290:13, AR203:13, AR052:13, AR289:13, AR033:13, AR191:13, AR316:13, AR165:13, AR300:13, AR055:13, AR164:12, AR266:12, AR243:12, AR249:12, AR271:12, AR190:12, AR166:12, AR273:12, AR270:12, AR241:12, AR178:12, AR253:12, AR061:12, AR175:12, AR232:12, AR246:11, AR181:11, AR267:11, AR313:11, AR261:11, AR274:11, AR239:11, AR198:11, AR182:11, AR250:11, AR309:10, AR280:10, AR200:10, AR234:10, AR229:10, AR180:10, AR291:10, AR184:10, AR255:10, AR272:10, AR235:10, AR245:10, AR192:9, AR161:9, AR296:9, AR039:9, AR221:9, AR231:9, AR251:9, AR201:9, AR257:9, AR236:9, AR204:9, AR162:9, AR233:9, AR216:8, AR210:8, AR215:8, AR295:8, AR314:8, AR265:8, AR284:8, AR228:8, AR312:8, AR277:8, AR286:8, AR213:8, AR194:8, AR288:8, AR226:8, AR298:8, AR242:8, AR256:7, AR227:7, AR193:7, AR217:7, AR262:7, AR053:7, AR264:7, AR179:7, AR224:7, AR237:6, AR202:6, AR293:6, AR230:6, AR214:6, AR297:6, AR287:6, AR205:6, AR292:6, AR285:6, AR258:6, AR263:6, AR294:6, AR225:6, AR281:6, AR212:5, AR170:5, AR206:5, AR308:5, AR172:5, AR222:5, AR259:5, AR169:4, AR260:4, AR171:4, AR252:4, AR207:3, AR311:3, AR168:2, AR223:2, S0474:13, L0747:7, S0410:6, H0617:5, L0777:5, H0618:4, H0521:4, H0661:3, H0663:3,

				<p>S0360:3, H0052:3, H0545:3, H0038:3, L0766:3, S0380:3, L0740:3, L0751:3, L0757:3, H0653:3, S0358:2, H0733:2, L0717:2, S0278:2, H0318:2, H0309:2, H0327:2, H0150:2, H0687:2, H0181:2, H0413:2, H0509:2, L0769:2, L0764:2, L0771:2, L0662:2, L0768:2, L0774:2, L0776:2, L5622:2, L0666:2, L0663:2, L2261:2, S0126:2, H0658:2, S0406:2, L0744:2, L0758:2, L0588:2, L3643:1, S0342:1, H0713:1, H0740:1, T0049:1, H0657:1, S0116:1, S0282:1, H0402:1, H0638:1, S0418:1, S0420:1, S0442:1, S0444:1, S0408:1, H0730:1, H0741:1, H0735:1, H0776:1, S0300:1, L3388:1, H0370:1, H0592:1, H0643:1, L0623:1, H0156:1, L0021:1, H0253:1, H0263:1, L0738:1, H0530:1, H0571:1, H0081:1, H0578:1, H0083:1, H0266:1, H0039:1, H0604:1, H0031:1, H0616:1, H0087:1, T0004:1, H0494:1, S0438:1, S0142:1, H0743:1, H0529:1, L0763:1, L0796:1, L0761:1, L0645:1, L0773:1, L0364:1, L0561:1, L0650:1, L0651:1, L0653:1, L0655:1, L0661:1, L0629:1, L0657:1, L0658:1, L4669:1, L2258:1, H0725:1, H0519:1, H0670:1, H0672:1, H0518:1, S0044:1, H0555:1, H0436:1, S0141:1, L0439:1, L0749:1, L0731:1, L0759:1, S0260:1, H0445:1, S0434:1, S0196:1, H0423:1 and H0506:1.</p>
	HBGBA69	709658	196	
15	HBIAE26	514418	25	<p>AR161:11, AR162:11, AR163:11, AR313:9, AR242:8, AR165:8, AR039:7, AR164:7, AR166:7, AR207:6, AR201:6, AR204:6, AR089:6, AR096:6, AR197:6, AR309:6, AR053:5, AR193:5, AR264:5, AR299:5, AR060:5, AR182:5, AR173:5, AR185:5, AR198:5, AR236:5, AR300:5, AR181:5, AR228:5, AR271:5, AR176:5, AR277:5, AR055:5, AR262:5, AR196:5, AR247:5, AR250:4, AR258:4, AR312:4, AR257:4, AR175:4, AR229:4, AR178:4, AR179:4, AR316:4, AR293:4, AR269:4, AR274:4, AR240:4, AR261:4, AR246:4, AR104:4, AR266:4, AR177:4, AR191:4, AR233:4, AR275:4, AR192:4, AR268:4, AR183:4, AR213:4, AR205:4, AR231:4, AR297:4, AR288:4, AR174:3, AR212:3, AR294:3, AR270:3, AR267:3, AR238:3, AR180:3, AR215:3, AR255:3, AR245:3, AR199:3, AR287:3, AR226:3, AR296:3, AR234:3, AR203:3, AR218:3, AR285:3, AR282:3, AR311:3, AR195:3, AR200:3, AR239:3, AR283:3, AR263:3, AR217:3, AR222:3, AR272:3, AR291:3, AR237:3, AR033:3, AR290:3, AR188:3, AR243:3, AR253:3, AR189:3, AR225:3, AR295:3, AR230:3, AR170:3, AR061:2, AR219:2, AR286:2, AR308:2, AR227:2, AR256:2, AR232:2, AR216:2, AR190:2, AR171:2, AR289:2, AR211:2, AR223:2, AR235:1, AR214:1 S0049:1 and S0146:1.</p>
16	HBINS58	1352386	26	<p>AR222:31, AR214:31, AR169:26, AR223:23, AR235:22, AR224:22, AR283:21, AR195:20, AR170:20, AR168:20, AR264:20, AR263:19, AR212:19, AR207:18, AR282:18, AR161:18, AR315:18, AR311:18, AR172:17, AR089:17, AR162:16, AR216:16, AR217:16, AR316:16, AR261:16, AR281:16, AR171:16, AR163:16, AR277:16, AR236:14, AR104:14, AR309:14, AR213:13, AR308:13, AR096:13, AR314:13, AR240:13, AR055:12, AR310:12, AR299:12, AR194:12, AR265:12, AR053:12, AR313:12, AR242:12, AR272:12, AR288:12, AR225:11, AR205:11, AR202:11, AR295:11, AR280:11, AR198:11, AR245:11, AR165:11, AR039:11, AR166:11, AR060:11, AR193:10, AR297:10, AR271:10, AR164:10, AR252:10, AR232:10, AR192:10, AR284:10, AR300:10, AR177:10, AR218:10, AR285:10, AR312:9, AR033:9, AR197:9, AR246:9, AR289:9, AR196:9, AR201:9, AR206:9, AR174:9, AR219:9, AR296:9, AR221:9, AR254:9, AR262:9, AR181:8, AR204:8, AR291:8, AR275:8, AR185:8, AR243:8, AR274:8, AR286:8, AR247:8, AR241:8, AR238:8, AR266:8, AR287:7, AR229:7, AR292:7, AR230:7, AR268:7, AR251:7, AR211:7, AR239:7, AR178:7, AR270:7, AR231:7, AR226:7, AR227:7, AR183:7, AR184:7, AR215:6, AR293:6, AR234:6, AR269:6, AR253:6, AR199:6, AR176:6, AR210:6, AR180:6, AR200:6, AR298:6, AR188:6, AR250:6, AR257:6, AR233:5, AR294:5, AR175:5, AR203:5, AR267:5, AR249:5, AR191:5, AR189:5, AR248:5, AR182:5, AR290:5, AR273:5, AR173:5, AR228:5, AR259:5, AR258:5, AR255:5, AR237:5, AR052:5, AR190:5, AR061:4, AR179:4, AR256:4, AR186:3, AR260:3, AR244:3 H0593:2, H0617:1, L0657:1 and L0592:1.</p>

	HBINS58	961712	197	
	HBINS58	892924	198	
17	HBNAW17	526797	27	AR266:6, AR245:3, AR168:2, AR246:2, AR217:2, AR177:2, AR291:2, AR264:2, AR274:1, AR165:1, AR267:1, AR312:1, AR216:1, AR311:1, AR164:1, AR261:1, AR182:1, AR299:1, AR257:1, AR166:1, AR243:1, AR309:1, AR089:1, AR224:1, AR175:1, L0766:3 and H0188:1.
18	HCEZF54	634016	28	AR253:23, AR250:22, AR271:21, AR197:20, AR195:19, AR199:18, AR252:16, AR272:13, AR254:12, AR198:12, AR269:12, AR211:12, AR205:11, AR180:11, AR176:11, AR210:11, AR200:11, AR240:10, AR161:10, AR266:10, AR162:10, AR229:10, AR177:10, AR163:10, AR242:10, AR243:10, AR309:10, AR246:10, AR268:9, AR181:9, AR245:9, AR165:9, AR183:9, AR275:9, AR238:9, AR291:9, AR178:9, AR264:9, AR164:9, AR196:9, AR204:9, AR188:8, AR166:8, AR182:8, AR191:8, AR255:8, AR175:8, AR289:8, AR179:8, AR290:8, AR237:8, AR189:8, AR225:8, AR235:8, AR193:8, AR247:8, AR270:8, AR234:7, AR219:7, AR201:7, AR263:7, AR207:7, AR228:7, AR267:7, AR312:7, AR190:7, AR308:7, AR173:7, AR296:7, AR274:7, AR257:7, AR297:7, AR311:7, AR213:7, AR293:7, AR313:7, AR287:6, AR033:6, AR262:6, AR300:6, AR224:6, AR218:6, AR288:6, AR192:6, AR295:6, AR294:6, AR203:6, AR285:6, AR239:6, AR089:6, AR282:6, AR174:6, AR185:5, AR233:5, AR236:5, AR316:5, AR096:5, AR230:5, AR286:5, AR217:5, AR222:5, AR261:5, AR053:5, AR061:5, AR221:5, AR214:5, AR168:4, AR223:4, AR172:4, AR226:4, AR169:4, AR258:4, AR039:4, AR299:4, AR283:4, AR216:4, AR232:4, AR060:4, AR227:4, AR277:3, AR104:3, AR256:3, AR055:3, AR260:3, AR171:2, AR170:2, AR215:1, H0052:9, L0794:6, L0758:6, L0659:5, L0666:4, L0438:4, S0126:4, L0754:4, L0779:4, H0617:3, L0748:3, L0751:3, L0759:3, H0333:2, H0013:2, H0150:2, H0494:2, L0761:2, L0641:2, L0649:2, L0809:2, L0519:2, L0663:2, S0380:2, L3832:2, L0439:2, L0747:2, L0749:2, H0685:1, H0713:1, H0295:1, H0341:1, H0484:1, H0255:1, H0638:1, S0358:1, S0046:1, S0476:1, H0393:1, L3388:1, H0261:1, S0222:1, H0592:1, H0069:1, H0596:1, H0009:1, H0178:1, H0081:1, H0051:1, H0266:1, H0428:1, H0100:1, S0112:1, L0639:1, L5575:1, L3905:1, L0662:1, L0766:1, L0804:1, L0651:1, L0655:1, L0787:1, L0664:1, L0665:1, T0068:1, H0672:1, H0539:1, L0602:1, S0406:1, H0436:1, H0478:1, L0777:1, L0755:1, H0422:1 and H0506:1.
19	HCE3G69	728432	29	AR033:18, AR197:14, AR195:13, AR196:11, AR271:10, AR242:10, AR243:9, AR165:9, AR201:9, AR207:9, AR164:9, AR182:9, AR166:9, AR269:8, AR198:8, AR235:8, AR161:8, AR162:8, AR183:8, AR272:8, AR268:8, AR296:8, AR163:8, AR176:8, AR193:8, AR238:7, AR254:7, AR200:7, AR247:7, AR181:7, AR291:7, AR225:7, AR309:6, AR178:6, AR270:6, AR188:6, AR173:6, AR266:6, AR228:6, AR282:6, AR246:6, AR169:6, AR213:6, AR212:6, AR192:6, AR177:6, AR261:6, AR250:6, AR175:6, AR204:6, AR239:6, AR233:6, AR234:6, AR255:6, AR288:5, AR171:5, AR267:5, AR217:5, AR290:5, AR168:5, AR223:5, AR236:5, AR089:5, AR289:5, AR191:5, AR203:5, AR224:5, AR245:5, AR061:5, AR104:5, AR308:5, AR229:5, AR205:5, AR060:5, AR039:5, AR231:5, AR240:5, AR053:5, AR274:5, AR287:5, AR222:5, AR216:5, AR316:5, AR214:5, AR215:5, AR264:5, AR199:5, AR174:5, AR221:5, AR297:5, AR312:4, AR180:4, AR213:4, AR295:4, AR179:4, AR170:4, AR263:4, AR293:4, AR253:4, AR299:4, AR232:4, AR257:4, AR189:4, AR300:4, AR294:4, AR311:4, AR237:4, AR285:4, AR210:4, AR275:4, AR172:4, AR190:4, AR226:4, AR211:4, AR230:4, AR185:3, AR286:3, AR227:3, AR262:3, AR055:3, AR256:3, AR277:3, AR096:3, AR219:2, AR283:2, AR260:2, AR218:2, AR252:1, L0439:9, H0052:7, L0748:7, S0440:5, L0758:5, H0046:4, H0038:4, L0769:4, S0442:3, H0013:3, H0253:3, T0010:3, L0774:3, L0776:3, H0144:3, H0521:3, S0404:3, L0752:3, L0731:3, H0656:2, S0360:2, S0222:2, H0618:2, H0620:2, L0351:2, S0422:2, L0764:2, L0771:2, L0783:2, L0793:2, H0658:2, H0666:2, L0751:2, L0754:2, L0745:2, L0747:2, L0750:2, H0624:1, H0265:1, H0556:1.

					H0686:1, S0134:1, S0212:1, S0001:1, H0254:1, H0661:1, L0946:1, S0354:1, S0444:1, S0408:1, H0734:1, L3081:1, S0300:1, S0278:1, H0369:1, H0370:1, H0333:1, H0574:1, H0486:1, H0036:1, H0263:1, H0597:1, H0545:1, H0572:1, H0024:1, S0388:1, S0051:1, S0250:1, H0252:1, H0428:1, H0039:1, H0644:1, L0055:1, H0674:1, H0135:1, H0087:1, T0067:1, H0488:1, L3154:1, H0529:1, L0763:1, L0770:1, L3905:1, L0761:1, L0374:1, L0662:1, L0768:1, L0766:1, L0803:1, L0775:1, L0805:1, L0653:1, L0661:1, L0526:1, L0666:1, L0664:1, L0665:1, S0053:1, L0710:1, L2654:1, H0547:1, H0582:1, H0435:1, H0670:1, H0660:1, H0648:1, H0672:1, S0328:1, H0539:1, S0152:1, H0696:1, S0044:1, S0406:1, H0631:1, S014:1, S0028:1, L0742:1, L0749:1, L0753:1, L0759:1, S0436:1, S0011:1, S0192:1, H0542:1, H0423:1, S0398:1 and H0506:1.
	HCE3G69	494346	199		
20	HCE5F43	612796	30		AR060:280, AR055:230, AR299:151, AR089:139, AR104:127, AR283:124, AR185:112, AR039:97, AR096:88, AR316:79, AR282:66, AR277:62, AR300:50, AR240:46, AR218:40, AR219:35, AR313:29, AR215:8, AR169:8, AR221:8, AR217:8, AR214:7, AR216:7, AR225:7, AR171:6, AR222:5, AR223:5, AR246:5, AR188:5, AR263:5, AR224:5, AR245:5, AR191:5, AR269:5, AR168:5, AR270:5, AR205:5, AR183:5, AR176:4, AR252:4, AR166:4, AR190:4, AR175:4, AR235:4, AR165:4, AR178:4, AR266:4, AR164:4, AR170:4, AR180:4, AR274:4, AR179:4, AR174:4, AR196:4, AR192:4, AR163:4, AR161:4, AR162:4, AR275:4, AR309:4, AR193:4, AR264:4, AR257:4, AR053:4, AR181:4, AR201:4, AR189:4, AR312:3, AR201:3, AR311:3, AR195:3, AR173:3, AR033:3, AR177:3, AR295:3, AR268:3, AR210:3, AR291:3, AR197:3, AR288:3, AR203:3, AR200:3, AR182:3, AR272:3, AR290:3, AR308:3, AR285:3, AR236:3, AR198:3, AR255:3, AR243:3, AR231:3, AR250:3, AR294:3, AR172:2, AR287:2, AR286:2, AR238:2, AR237:2, AR226:2, AR289:2, AR254:2, AR297:2, AR296:2, AR204:2, AR247:2, AR260:2, AR262:2, AR293:2, AR239:2, AR261:2, AR233:2, AR229:2, AR232:2, AR267:2, AR211:2, AR234:2, AR212:2, AR256:1, AR258:1, L0777:10, L0756:4, S0414:3, L0659:3, L0740:3, H0441:2, S0003:2, H0616:2, L0766:2, H0144:2, L0439:2, L0780:2, L0759:2, L0596:2, S0242:2, H0542:2, S0470:1, S0342:1, H0341:1, S0001:1, S0282:1, S0408:1, S0007:1, T0060:1, H0427:1, H0098:1, H0042:1, H0581:1, S0049:1, H0052:1, H0024:1, H0051:1, H0647:1, S0422:1, L0770:1, L0769:1, L0772:1, L0662:1, L0794:1, L0803:1, L0805:1, L0666:1, L0663:1, L0664:1, S0374:1, S0126:1, H0648:1, H0696:1, L0747:1, L0752:1, L0755:1 and L0591:1.
21	HCEFB80	1143407	31		H0052:6, L0439:5, L0794:3, L0748:3, L0415:2, H0661:2, H0559:2, S0049:2, H0327:2, S0051:2, H0399:2, S0036:2, L0351:2, L0770:2, H0144:2, L0758:2, L0759:2, S0116:1, S0110:1, H0637:1, H0261:1, S0222:1, H0438:1, H0013:1, H0569:1, H0320:1, S0422:1, H0529:1, L0638:1, L0517:1, L0438:1, S0126:1, L0749:1, L0756:1 and L0592:1.
	HCEFB80	1046853	200		
22	HCEWE20	543370	32		AR253:8, AR053:6, AR196:6, AR198:5, AR191:5, AR313:5, AR245:4, AR181:4, AR174:4, AR195:4, AR189:3, AR096:3, AR089:3, AR213:3, AR177:3, AR270:3, AR254:3, AR300:3, AR190:3, AR269:3, AR224:3, AR247:3, AR188:2, AR275:2, AR175:2, AR226:2, AR165:2, AR171:2, AR312:2, AR179:2, AR162:2, AR180:2, AR164:2, AR299:2, AR161:2, AR163:2, AR257:2, AR238:2, AR166:2, AR240:2, AR185:2, AR268:2, AR207:2, AR223:2, AR199:2, AR060:2, AR178:2, AR316:2, AR204:2, AR173:2, AR295:2, AR200:2, AR183:2, AR212:2, AR309:2, AR233:2, AR216:2, AR229:1, AR294:1, AR237:1, AR290:1, AR235:1, AR239:1, AR228:1, AR288:1, AR234:1, AR201:1, AR168:1, AR289:1, AR293:1, AR286:1, AR222:1, AR236:1, AR258:1, AR182:1, AR033:1, AR287:1, AR283:1, AR282:1, AR266:1, AR232:1, AR262:1, AR230:1, H0052:2, H0261:1, H0271:1 and S0458:1.
23	HCGMD59	636078	33		AR214:5, AR216:4, AR215:4, AR269:4, AR217:3, AR232:3, AR193:3, AR297:3, AR286:3, AR245:3, AR176:3, AR294:3,

24	HCNDR47	1016919	34	AR264:3, AR197:3, AR295:3, AR200:2, AR312:2, AR096:2, AR165:2, AR104:2, AR263:2, AR183:2, AR164:2, AR243:2, AR168:2, AR195:2, AR238:2, AR277:2, AR283:2, AR033:1, AR171:1, AR296:1, AR060:1, AR228:1, AR172:1, AR210:1, AR227:1, AR224:1, AR061:1, AR289:1, AR309:1, AR237:1, AR308:1, AR293:1, L0748:6, L0750:4, S0386:3, L0439:3, L0777:3, H0624:2, H0052:2, L0435:2, L0598:2, L0809:2, L0751:2, L0747:2, L0753:2, L0731:2, H0422:2, L0718:2, H0265:1, H0381:1, H0459:1, S0356:1, S0360:1, H0619:1, H0393:1, H0411:1, H0050:1, L0455:1, H0412:1, S0344:1, L0769:1, L0638:1, L0764:1, L0771:1, L0803:1, L0804:1, L0805:1, L0776:1, L0438:1, H0659:1, H0689:1, H0660:1, H0666:1, L0594:1 and S0106:1.
				AR282:5, AR060:5, AR309:4, AR055:4, AR266:4, AR162:4, AR213:4, AR161:4, AR225:4, AR254:3, AR270:3, AR177:3, AR207:3, AR300:3, AR176:3, AR089:3, AR192:3, AR263:2, AR221:2, AR172:2, AR198:2, AR104:2, AR224:2, AR283:2, AR240:2, AR277:2, AR185:2, AR165:2, AR218:2, AR164:2, AR197:2, AR166:2, AR096:2, AR299:2, AR275:2, AR269:2, AR236:2, AR168:2, AR316:2, AR288:2, AR313:2, AR171:2, AR217:2, AR183:2, AR308:2, AR257:2, AR039:2, AR296:2, AR272:2, AR264:1, AR033:1, AR261:1, AR311:1, AR246:1, AR212:1, AR286:1, AR289:1, AR255:1, AR231:1, AR237:1, AR061:1, AR179:1, AR238:1, AR297:1, AR245:1, AR195:1, L0794:3, L0764:2, L0439:2, H0052:1, H0597:1, T0006:1, L0766:1, H0648:1, S0330:1 and L0753:1.
25	HCNDR47	863677	201	
				AR207:46, AR223:40, AR281:39, AR194:39, AR214:36, AR169:35, AR222:34, AR206:34, AR202:33, AR264:32, AR263:30, AR195:30, AR315:29, AR308:29, AR235:28, AR212:28, AR172:28, AR170:27, AR224:27, AR246:27, AR168:27, AR311:26, AR171:26, AR244:25, AR205:25, AR165:25, AR280:24, AR198:24, AR164:24, AR216:23, AR192:23, AR166:23, AR241:23, AR213:23, AR271:22, AR162:22, AR314:22, AR245:22, AR163:21, AR261:21, AR197:21, AR265:21, AR161:20, AR217:20, AR215:20, AR225:19, AR243:19, AR309:19, AR053:19, AR310:18, AR221:18, AR033:18, AR295:17, AR236:17, AR273:17, AR204:17, AR242:17, AR274:16, AR196:16, AR201:15, AR240:15, AR288:15, AR052:15, AR252:15, AR282:15, AR193:14, AR177:14, AR312:14, AR251:14, AR174:14, AR275:13, AR247:13, AR211:13, AR089:13, AR181:13, AR297:13, AR210:12, AR039:12, AR277:12, AR284:12, AR299:12, AR188:12, AR232:12, AR283:12, AR300:12, AR266:12, AR272:12, AR096:12, AR176:12, AR289:11, AR180:11, AR229:11, AR199:11, AR238:11, AR313:11, AR291:11, AR285:11, AR191:11, AR178:11, AR262:11, AR292:10, AR186:10, AR316:10, AR239:10, AR226:10, AR230:10, AR173:10, AR231:10, AR250:9, AR227:9, AR055:9, AR286:9, AR219:9, AR293:9, AR185:9, AR296:9, AR255:9, AR104:9, AR175:9, AR200:9, AR258:9, AR298:9, AR233:9, AR237:9, AR218:9, AR190:9, AR287:9, AR183:8, AR268:8, AR203:8, AR260:8, AR234:8, AR257:8, AR179:8, AR189:8, AR254:8, AR269:8, AR270:8, AR182:8, AR061:8, AR256:7, AR248:7, AR233:7, AR060:7, AR294:7, AR228:7, AR259:6, AR290:6, AR267:6, AR249:5, AR184:5, L0748:5, H0046:2, H0012:2, H0620:2, L0804:2, L0747:2, H0624:1, H0662:1, S0356:1, S0358:1, H0602:1, H0592:1, H0013:1, H0042:1, T0110:1, H0231:1, H0622:1, H0264:1, H0494:1, L0771:1, L0666:1, S0374:1, H0693:1, H0593:1, H0670:1, H0672:1, L0749:1, L0779:1, L0758:1, L0596:1 and H0506:1.
26	HCNDR47	589445	203	
26	HCNDR47	550208	36	AR223:4, AR215:3, AR268:3, AR270:3, AR250:3, AR161:3, AR246:3, AR162:3, AR166:2, AR171:2, AR254:2, AR217:2, AR213:2, AR177:2, AR089:2, AR243:2, AR290:2, AR257:2, AR269:2, AR288:1, AR313:1, AR179:1, AR205:1, AR309:1, AR165:1, AR163:1, AR170:1, AR261:1, AR225:1, AR195:1, AR240:1, AR181:1, AR238:1, AR193:1, AR299:1, L0789:4,

27	HCWDS72	707833	37	L0809:2, L0759:2, L0596:2, H0306:1, H0402:1, H0580:1, H0370:1, H0404:1, H0559:1, H0486:1, H0031:1, H0674:1, H0135:1, H0100:1, L0800:1, L0794:1, L0804:1, L0805:1, L0515:1, L0783:1, H0672:1, L0777:1, H0444:1 and H0352:1. AR194:5, AR162:5, AR241:4, AR215:4, AR249:4, AR313:3, AR221:3, AR207:3, AR310:3, AR169:3, AR265:3, AR229:3, AR183:3, AR298:2, AR282:2, AR284:2, AR291:2, AR292:2, AR312:2, AR270:2, AR223:2, AR165:2, AR273:2, AR182:2, AR164:2, AR227:2, AR240:2, AR289:2, AR166:2, AR172:2, AR266:2, AR246:2, AR061:2, AR222:2, AR293:2, AR269:2, AR053:2, AR171:2, AR238:2, AR295:2, AR271:1, AR177:1, AR163:1, AR299:1, AR052:1, AR290:1, AR039:1, AR231:1, AR296:1, AR096:1, AR178:1, AR186:1, AR232:1, AR294:1, AR285:1, AR286:1, AR192:1, AR233:1, AR268:1, AR247:1, AR161:1, AR230:1, AR274:1, AR226:1, AR210:1, AR300:1, AR089:1, AR311:1, AR277:1, AR234:1, AR237:1, AR193:1, AR206:1, AR259:1, AR201:1, AR168:1, AR216:1 L0752:30, L0754:17, L0740:16, H0521:14, L0439:14, L0766:12, S0003:11, S0214:11, L0777:10, S0002:8, L0770:8, L0776:8, L0748:8, L0755:8, S0360:7, L0665:7, L0757:7, T0067:6, S0440:6, L0666:6, L0747:6, L0774:5, L0751:5, S0222:4, H0575:4, H0622:4, L0662:4, L0775:4, H0547:4, S0126:4, S0380:4, L0750:4, L0758:4, S0436:4, L0362:4, H0638:3, H0580:3, H0494:3, S0422:3, L0598:3, S0374:3, H0710:3, H0522:3, H0555:3, L0356:3, L0756:3, L0780:3, L0731:3, L0759:3, L0594:3, S0134:2, S0376:2, S0046:2, H0393:2, S0278:2, H0438:2, H0386:2, L2477:2, H0156:2, S0474:2, H0581:2, H0421:2, T0110:2, L0471:2, S0222:2, H0090:2, H0591:2, H0040:2, H0551:2, H0412:2, L0520:2, L0764:2, L0768:2, L0803:2, L0655:2, L0807:2, L0659:2, L0664:2, L0438:2, H0648:2, H0672:2, S0406:2, S0028:2, L0588:2, L0599:2, H0667:2, S0196:2, H0624:1, H0171:1, H0265:1, S0040:1, H0713:1, S0114:1, L0811:1, H0341:1, S0212:1, S0001:1, H0661:1, H0305:1, S0418:1, L3649:1, H0741:1, S0045:1, H0747:1, S0132:1, S0476:1, L3089:1, H0619:1, H0415:1, H0409:1, L1942:1, L2495:1, L3655:1, H0013:1, S0010:1, S0665:1, H0327:1, H0046:1, L0157:1, S0051:1, T0010:1, H0266:1, H0179:1, H0615:1, H0096:1, H0031:1, H0553:1, L0055:1, H0674:1, H0163:1, H0038:1, H0264:1, H0413:1, L0564:1, H0560:1, H0359:1, H0509:1, S0142:1, S0344:1, UNKWN:1, L0369:1, L0762:1, L0371:1, L0796:1, L0761:1, L0373:1, L0773:1, L0521:1, L0794:1, L0804:1, L0784:1, L0518:1, L0783:1, L0647:1, L5622:1, L5623:1, L3391:1, L2657:1, L2262:1, L3636:1, H0144:1, H0684:1, H0659:1, H0658:1, S0330:1, S0152:1, H0696:1, S0404:1, S0037:1, L0746:1, L0779:1, S0031:1, H0707:1, S0434:1, L0480:1, L0608:1, L0604:1, S0011:1, S0192:1, S0456:1 and H0506:1. AR313:9, AR164:8, AR165:8, AR166:8, AR163:7, AR161:7, AR089:6, AR039:5, AR173:5, AR096:5, AR180:5, AR192:4, AR263:4, AR299:4, AR282:4, AR242:4, AR053:4, AR178:4, AR175:4, AR247:4, AR269:4, AR296:4, AR257:3, AR212:3, AR174:3, AR240:3, AR262:3, AR196:3, AR274:3, AR312:3, AR234:3, AR229:3, AR199:3, AR243:3, AR264:3, AR185:3, AR300:3, AR179:3, AR311:3, AR191:3, AR293:3, AR181:3, AR272:3, AR297:3, AR213:3, AR171:3, AR270:3, AR183:3, AR238:3, AR236:3, AR316:3, AR060:3, AR308:3, AR294:3, AR266:3, AR226:3, AR177:3, AR258:3, AR285:2, AR104:2, AR233:2, AR172:2, AR193:2, AR197:2, AR291:2, AR231:2, AR188:2, AR219:2, AR255:2, AR275:2, AR189:2, AR237:2, AR290:2, AR295:2, AR287:2, AR277:2, AR218:2, AR267:2, AR182:2, AR228:2, AR268:2, AR204:2, AR190:2, AR246:2, AR239:2, AR232:2, AR261:2, AR223:2, AR201:2, AR217:2, AR195:2, AR260:1, AR200:1, AR170:1, AR286:1, AR216:1, AR288:1, AR222:1, AR227:1, AR230:1 H0305:2 and H0589:1. AR195:10, AR245:9, AR242:9, AR309:9, AR196:8, AR192:8, AR225:8, AR198:8, AR207:8, AR246:8, AR169:8, AR170:8, AR223:8, AR224:7, AR214:7, AR039:7, AR172:7, AR215:7, AR221:7, AR193:7, AR205:7, AR221:7, AR199:7, AR272:7, AR168:7, AR089:7, AR213:6, AR263:6, AR165:6, AR216:6, AR164:6, AR274:6, AR217:6, AR261:6, AR053:6,
28	HCWKC15	553621	38	
29	HDIHEB60	499233	39	

30	HDPBA28	1062783	40	<p>AR166:6, AR055:6, AR312:6, AR308:6, AR197:6, AR283:5, AR240:5, AR282:5, AR171:5, AR253:5, AR235:5, AR311:5, AR295:5, AR250:5, AR275:5, AR243:5, AR291:5, AR162:5, AR297:5, AR264:5, AR313:5, AR288:5, AR316:5, AR204:5, AR163:5, AR299:5, AR161:5, AR257:5, AR286:5, AR271:5, AR189:5, AR236:5, AR210:5, AR177:5, AR060:4, AR212:4, AR033:4, AR285:4, AR188:4, AR200:4, AR174:4, AR287:4, AR096:4, AR296:4, AR258:4, AR175:4, AR218:4, AR176:4, AR293:4, AR180:4, AR191:4, AR203:4, AR219:4, AR289:4, AR277:4, AR256:4, AR183:4, AR190:4, AR247:4, AR300:4, AR181:3, AR269:3, AR173:3, AR262:3, AR238:3, AR268:3, AR178:3, AR185:3, AR255:3, AR270:3, AR294:3, AR266:3, AR211:3, AR260:3, AR229:3, AR104:3, AR231:3, AR267:3, AR239:3, AR290:3, AR182:3, AR226:3, AR232:3, AR061:2, AR233:2, AR237:2, AR227:2, AR234:2, AR179:2, AR230:2, AR228:2, H0265:2, S0360:2, H0581:2, H0552:2, H0570:2, H0087:2, L0439:2, H0445:2, H0650:1, S0354:1, H0580:1, H0741:1, H0586:1, H0559:1, H0486:1, L0021:1, H0618:1, H0009:1, H0571:1, S0051:1, S0368:1, H0181:1, H0551:1, S0294:1, L3905:1, L0646:1, L0764:1, L0662:1, L0794:1, L0658:1, L0659:1, L0665:1, H0547:1, H0682:1, H0684:1, H0670:1 and S3014:1.</p> <p>AR249:72, AR213:48, AR253:40, AR096:37, AR052:37, AR263:33, AR053:32, AR212:31, AR265:27, AR184:26, AR254:26, AR264:22, AR248:18, AR251:17, AR240:17, AR313:16, AR268:14, AR272:13, AR290:13, AR311:13, AR310:13, AR177:13, AR180:13, AR246:13, AR245:10, AR250:10, AR309:10, AR275:10, AR183:9, AR247:9, AR274:9, AR312:9, AR039:9, AR308:9, AR269:9, AR271:8, AR179:8, AR270:8, AR267:8, AR316:7, AR198:7, AR252:7, AR244:7, AR243:7, AR175:6, AR193:6, AR195:6, AR165:6, AR299:6, AR192:6, AR166:6, AR201:6, AR164:6, AR162:6, AR161:6, AR242:6, AR163:6, AR273:6, AR300:5, AR197:5, AR284:5, AR282:5, AR055:5, AR181:4, AR169:4, AR174:4, AR185:4, AR061:4, AR089:4, AR298:4, AR259:4, AR234:4, AR293:3, AR182:3, AR202:3, AR205:3, AR231:3, AR215:3, AR283:3, AR236:3, AR225:3, AR173:2, AR178:2, AR060:2, AR294:2, AR186:2, AR296:2, AR222:2, AR285:2, AR281:2, AR104:2, AR292:2, AR176:2, AR295:2, AR207:2, AR217:2, AR229:2, AR289:2, AR226:2, AR291:2, AR206:2, AR172:2, AR288:2, AR033:2, AR235:2, AR238:2, AR191:2, AR170:2, AR194:2, AR232:2, AR230:2, AR286:2, AR189:1, AR257:1, AR190:1, AR199:1, AR277:1, AR287:1, AR200:1, AR224:1, AR171:1, AR297:1, AR223:1, AR168:1, AR228:1, AR266:1, AR258:1, AR233:1, AR204:1, AR262:1, AR315:1, AR255:1, AR237:1, AR280:1, H0521:4, L0454:2, S0442:2, L0758:2, H0720:1, H0255:1, S0376:1, H0486:1, H0581:1, H0373:1, H0268:1, S0440:1, L0763:1, L0803:1, H0435:1, H0658:1, L3833:1, H0522:1, L0748:1, L0749:1, L0588:1 and H0543:1.</p>
31	HDPBA28 HDPCL63	866429 1019008	204 41	<p>AR281:19, AR202:15, AR194:15, AR196:14, AR315:13, AR207:13, AR206:13, AR265:13, AR205:12, AR244:12, AR195:12, AR222:11, AR033:11, AR235:10, AR214:10, AR263:10, AR225:10, AR218:10, AR246:10, AR197:10, AR261:10, AR284:10, AR310:10, AR170:10, AR242:10, AR224:10, AR198:10, AR162:10, AR311:9, AR161:9, AR172:9, AR192:9, AR241:9, AR169:9, AR223:9, AR171:9, AR291:9, AR183:9, AR314:9, AR273:9, AR215:9, AR163:9, AR298:9, AR216:8, AR295:8, AR217:8, AR174:8, AR240:8, AR280:8, AR282:8, AR275:8, AR193:8, AR181:8, AR243:8, AR245:8, AR252:8, AR221:8, AR168:8, AR264:8, AR219:8, AR285:8, AR271:8, AR165:7, AR176:7, AR177:7, AR201:7, AR296:7, AR211:7, AR191:7, AR270:7, AR212:7, AR175:7, AR164:7, AR269:7, AR247:7, AR184:7, AR289:7, AR288:7, AR309:7, AR286:7, AR210:7, AR213:7, AR268:7, AR250:7, AR200:7, AR287:7, AR189:7, AR292:7, AR053:7, AR266:7, AR104:6, AR173:6, AR204:6, AR297:6, AR283:6, AR272:6, AR290:6, AR236:6, AR182:6, AR312:6, AR308:6, AR180:6, AR096:6, AR277:6, AR188:6, AR293:6, AR186:6, AR299:6, AR190:5, AR052:5, AR300:5, AR199:5, AR039:5, AR251:5, AR089:5, AR249:5, AR178:5,</p>

				AR231:5, AR294:5, AR248:5, AR274:5, AR316:5, AR055:4, AR232:4, AR257:4, AR313:4, AR262:4, AR258:4, AR234:4, AR238:4, AR229:4, AR203:4, AR254:4, AR256:3, AR061:3, AR255:3, AR179:3, AR226:3, AR185:3, AR259:3, AR227:3, AR260:3, AR230:3, AR060:3, AR233:3, AR237:3, AR253:2, L0751:8, L0439:6, L0659:5, L0438:4, L0744:4, L0754:4, L0777:4, S0046:3, H0052:3, H0009:3, H0271:3, L0662:3, L0665:3, L0747:3, H0740:2, S0358:2, H0586:2, H0251:2, H0100:2, L3905:2, L0794:2, L0803:2, L0809:2, H0519:2, S0126:2, L0749:2, L0731:2, L0757:2, L0605:2, H0170:1, H0717:1, H0295:1, H0294:1, L0785:1, S0116:1, H0483:1, L3659:1, S0418:1, H0742:1, H0735:1, S0045:1, H0619:1, H0550:1, H0370:1, H0592:1, H0574:1, H0427:1, H0599:1, T0082:1, S0010:1, S0049:1, H0544:1, H0545:1, H0570:1, H0051:1, S0388:1, H0356:1, H0399:1, H0266:1, H0622:1, L0194:1, H0135:1, H0412:1, H0623:1, H0059:1, L0351:1, T0042:1, H0561:1, S0294:1, L0640:1, L4747:1, L5575:1, L5565:1, L0800:1, L0764:1, L0648:1, L0768:1, L0774:1, L0776:1, L0657:1, L0559:1, L0519:1, L0789:1, L0792:1, L0666:1, L0664:1, L0709:1, L3811:1, H0520:1, H0547:1, S0328:1, S0378:1, H0754:1, S0152:1, H0521:1, S0190:1, S0406:1, H0436:1, L0748:1, L0780:1, L0759:1, L0601:1, L0366:1 and H0423:1.
	HDPCL63	847045	205	
	HDPCL63	897484	206	
32	HDPCL63	460682	42	AR060:2, AR055:2, AR282:2, H0521:2, H0445:2, H0394:1, H0747:1, H0581:1, L0761:1 and L0750:1.
33	HDPF29	628254	43	AR311:15, AR263:15, AR223:14, AR224:14, AR264:14, AR195:13, AR215:12, AR222:12, AR168:12, AR309:12, AR225:12, AR169:12, AR161:11, AR162:11, AR235:11, AR163:11, AR171:11, AR253:11, AR217:11, AR089:10, AR213:10, AR212:10, AR252:10, AR207:10, AR165:10, AR240:10, AR172:10, AR216:10, AR192:9, AR053:9, AR221:9, AR166:9, AR164:9, AR170:9, AR245:9, AR308:9, AR196:8, AR282:8, AR312:8, AR039:8, AR246:8, AR254:8, AR295:8, AR198:8, AR288:8, AR096:7, AR316:7, AR193:7, AR277:7, AR181:7, AR177:7, AR261:7, AR250:7, AR299:7, AR060:7, AR189:7, AR205:7, AR174:6, AR274:6, AR191:6, AR229:6, AR271:6, AR201:6, AR243:6, AR188:6, AR210:6, AR268:6, AR247:6, AR285:6, AR269:6, AR197:6, AR173:6, AR313:6, AR199:6, AR272:6, AR183:5, AR175:5, AR289:5, AR300:5, AR297:5, AR275:5, AR200:5, AR185:5, AR218:5, AR180:5, AR190:5, AR238:5, AR055:5, AR262:5, AR211:5, AR291:5, AR290:5, AR033:5, AR270:5, AR203:5, AR176:5, AR296:5, AR104:5, AR293:5, AR219:5, AR287:5, AR286:5, AR255:5, AR236:5, AR204:5, AR234:4, AR294:4, AR257:4, AR266:4, AR179:4, AR283:4, AR239:4, AR231:4, AR242:4, AR182:4, AR232:4, AR258:4, AR061:3, AR226:3, AR230:3, AR267:3, AR233:3, AR227:3, AR256:3, AR228:3, AR260:2, S0474:6, L0766:6, L0662:4, L0748:4, H0556:3, L0387:3, L0659:3, L0779:3, H0255:2, H0402:2, S0360:2, S0408:2, S0410:2, H0309:2, H0591:2, H0087:2, L0764:2, L0809:2, L0666:2, L0663:2, H0648:2, L0751:2, L0754:2, L0747:2, H0295:1, S0116:1, H0306:1, S0376:1, H0747:1, H0749:1, H0771:1, H0455:1, L0623:1, H0581:1, H0569:1, H0123:1, H0428:1, H0039:1, H0622:1, T0006:1, H0628:1, H0673:1, L0369:1, L0770:1, L0769:1, L0638:1, L0761:1, L0667:1, L0772:1, L0643:1, L0771:1, L0794:1, L0803:1, L0804:1, L0774:1, L0806:1, L0805:1, L0655:1, L0657:1, L0658:1, L0783:1, L0519:1, L0789:1, L0352:1, S0378:1, H0521:1, H0478:1, L0744:1, L0439:1, L0777:1, L0753:1 and S0434:1.
34	HDPGT01	771583	44	AR268:5, AR244:4, AR282:3, AR251:3, AR242:3, AR241:3, AR052:3, AR184:2, AR271:2, AR310:2, AR176:2, AR194:2, AR039:2, AR309:2, AR283:1, AR178:1, AR289:1, AR217:1, AR257:1, AR277:1, AR170:1, AR284:1, AR221:1, AR226:1, AR265:1, H0521:3, S0278:2, S0222:2, H0284:2, H0265:1, H0728:1, S0007:1, H0208:1, H0586:1, H0497:1, H0642:1, H0581:1, H0052:1, H0572:1, H0024:1, H0292:1, H0428:1, H0628:1, H0135:1, H0163:1, H0433:1, S0002:1, L2263:1, L0438:1, L3829:1, H0539:1, S0027:1, S0032:1, L0439:1, S0436:1, S0458:1 and H0352:1.

35	HDPHI51	460679	45	AR195:9, AR192:9, AR207:9, AR215:8, AR264:8, AR225:7, AR263:7, AR311:7, AR168:7, AR309:7, AR252:6, AR172:6, AR245:6, AR161:6, AR162:6, AR163:6, AR196:6, AR223:6, AR193:6, AR177:6, AR246:6, AR224:6, AR197:5, AR308:5, AR272:5, AR214:5, AR275:5, AR225:5, AR225:5, AR176:5, AR261:5, AR295:5, AR291:5, AR171:5, AR218:5, AR221:5, AR219:5, AR188:5, AR165:5, AR096:5, AR217:5, AR238:5, AR288:5, AR164:5, AR175:5, AR166:5, AR089:5, AR271:5, AR060:4, AR240:4, AR183:4, AR201:4, AR257:4, AR169:4, AR312:4, AR164:4, AR039:4, AR274:4, AR190:4, AR191:4, AR181:4, AR178:4, AR236:4, AR216:4, AR180:4, AR205:4, AR210:4, AR270:4, AR170:4, AR277:4, AR243:4, AR235:4, AR212:4, AR104:4, AR199:4, AR189:4, AR242:4, AR213:4, AR255:4, AR289:4, AR174:3, AR285:3, AR230:3, AR286:3, AR297:3, AR299:3, AR283:3, AR313:3, AR204:3, AR287:3, AR173:3, AR247:3, AR229:3, AR269:3, AR296:3, AR182:3, AR293:3, AR266:3, AR258:3, AR198:3, AR237:3, AR262:3, AR033:3, AR239:3, AR185:3, AR231:3, AR203:3, AR200:3, AR179:3, AR211:3, AR227:3, AR268:3, AR267:3, AR294:3, AR290:3, AR234:3, AR232:3, AR226:3, AR300:2, AR250:2, AR282:2, AR256:2, AR061:2, AR053:2, AR233:2, AR260:2, AR228:2, AR055:2 H0521:1
36	HDPJM30	879325	46	AR268:8, AR289:6, AR184:6, AR266:5, AR232:5, AR223:5, AR169:5, AR290:4, AR286:4, AR224:4, AR194:4, AR257:4, AR214:4, AR310:4, AR270:4, AR165:4, AR294:3, AR291:3, AR222:3, AR183:3, AR235:3, AR215:3, AR282:3, AR284:3, AR297:3, AR267:3, AR260:3, AR217:2, AR262:2, AR182:2, AR258:2, AR309:2, AR172:2, AR288:2, AR298:2, AR225:2, AR269:2, AR296:2, AR176:2, AR248:2, AR166:2, AR216:2, AR250:2, AR292:2, AR164:2, AR263:2, AR162:2, AR287:2, AR255:2, AR053:2, AR061:2, AR249:2, AR163:2, AR293:2, AR285:2, AR253:2, AR312:2, AR178:2, AR313:2, AR277:2, AR256:2, AR205:2, AR052:1, AR203:1, AR238:1, AR274:1, AR171:1, AR295:1, AR231:1, AR247:1, AR206:1, AR181:1, AR221:1, AR226:1, AR230:1, AR179:1, AR283:1, AR232:1, AR200:1, AR239:1, AR186:1, AR237:1, AR195:1, AR228:1, AR240:1, AR233:1, AR227:1, AR246:1, AR199:1, AR173:1, AR243:1, AR089:1, AR177:1 L0800:4, H0617:3, H0521:3, L0070:3, L0742:3, L0770:2, L0771:2, L0794:2, H0689:2, L0741:2, L0439:2, H0445:2, H0224:1, H0637:1, H0370:1, H0250:1, H0052:1, H0194:1, L0455:1, S0422:1, L0761:1, L0764:1, L0806:1, L0659:1, L5622:1, L0789:1, L0790:1, L0792:1, H0672:1, S0152:1, S0434:1 and S0436:1.
37	HDPJM30	603517	207	AR202:35, AR096:34, AR194:33, AR206:31, AR244:25, AR241:22, AR268:21, AR281:20, AR290:19, AR265:17, AR315:15, AR184:15, AR246:15, AR310:14, AR192:13, AR269:12, AR270:12, AR282:12, AR243:11, AR314:11, AR280:11, AR267:10, AR292:10, AR183:9, AR263:9, AR299:9, AR284:9, AR198:9, AR055:8, AR205:8, AR251:8, AR273:8, AR266:8, AR313:8, AR298:8, AR283:8, AR039:8, AR204:7, AR052:7, AR277:7, AR177:7, AR238:7, AR234:7, AR061:6, AR247:6, AR295:6, AR104:6, AR300:6, AR285:6, AR089:6, AR316:6, AR186:6, AR185:6, AR240:5, AR053:5, AR249:5, AR231:5, AR271:5, AR291:5, AR289:5, AR182:5, AR312:5, AR175:4, AR253:4, AR229:4, AR248:4, AR232:4, AR309:4, AR215:4, AR226:4, AR274:4, AR219:4, AR286:4, AR296:4, AR227:4, AR237:4, AR218:4, AR259:3, AR275:3, AR294:3, AR213:3, AR242:3, AR179:3, AR293:3, AR060:3, AR170:3, AR193:3, AR233:3, AR169:2, AR224:2, AR256:2, AR257:2, AR258:2, AR171:2, AR217:2, AR172:2, AR264:1, AR195:1, AR308:1, AR163:1, AR261:1, AR161:1, AR162:1, AR199:1, AR221:1, L0754:2, L0777:2, H0717:1, H0740:1, S0212:1, S0360:1, S0408:1, H0747:1, H0004:1, H0581:1, L0142:1, H0674:1, H0646:1, S0422:1, L0809:1, L0787:1, H0521:1 and H0522:1.
	HDPMM88	906121	208	
	HDPMM88	902299	209	

	HDPMM88	885059	210	
	HDPMM88	874074	211	
	HDPMM88	854246	212	
	HDPMM88	854245	213	
38	HDPOJ08	731863	48	AR250:19, AR254:19, AR269:19, AR268:16, AR248:16, AR290:15, AR249:13, AR270:12, AR253:12, AR183:10, AR267:10, AR180:10, AR161:9, AR162:9, AR165:9, AR164:9, AR163:9, AR181:8, AR166:8, AR173:8, AR174:8, AR184:7, AR235:7, AR252:7, AR229:7, AR272:7, AR176:7, AR178:6, AR265:6, AR239:6, AR182:6, AR175:6, AR096:6, AR291:5, AR189:5, AR288:5, AR287:5, AR190:5, AR251:5, AR263:5, AR230:5, AR179:5, AR228:5, AR236:4, AR234:4, AR257:4, AR193:4, AR238:4, AR237:4, AR285:4, AR233:4, AR289:4, AR185:4, AR311:4, AR286:4, AR308:4, AR226:4, AR282:4, AR264:4, AR240:4, AR232:4, AR201:4, AR261:4, AR292:4, AR089:4, AR210:4, AR212:4, AR295:4, AR247:4, AR297:4, AR275:4, AR262:4, AR245:4, AR195:4, AR188:4, AR231:4, AR197:4, AR309:4, AR196:4, AR284:4, AR191:4, AR299:4, AR313:3, AR255:3, AR199:3, AR200:3, AR293:3, AR300:3, AR316:3, AR296:3, AR246:3, AR203:3, AR243:3, AR294:3, AR214:3, AR274:3, AR104:3, AR060:3, AR219:3, AR298:3, AR033:3, AR227:3, AR053:3, AR221:2, AR271:2, AR312:2, AR223:2, AR218:2, AR061:2, AR259:2, AR224:2, AR217:2, AR272:2, AR225:2, AR258:2, AR215:2, AR039:2, AR168:2, AR266:2, AR211:2, AR055:2, AR222:2, AR205:2, AR216:2, AR202:1, AR213:1, AR256:1, AR314:1, S0474:29, L0766:11, H0521:10, L0803:7, L0748:6, L0717:5, L0759:5, S0003:4, L3832:4, H0663:3, H0156:3, L0598:3, L0770:3, L0771:3, L0804:3, L2439:3, H0522:3, L0731:3, S0436:3, H0486:2, S0426:2, L0805:2, L0659:2, L2260:2, S0126:2, S0406:2, L0749:2, L0755:2, L0757:2, L0758:2, L0590:2, S0026:2, H0716:1, H0341:1, S0212:1, L0481:1, S0444:1, S0360:1, L3649:1, H0637:1, H0580:1, H0734:1, H0749:1, L3092:1, L3092:1, H0619:1, L3388:1, H0586:1, H0574:1, H0427:1, L0021:1, H0575:1, H0318:1, H0545:1, H0024:1, H0373:1, H0071:1, H0179:1, S0214:1, H0428:1, H0674:1, H0591:1, H0616:1, H0488:1, H0494:1, S0438:1, S0440:1, H0647:1, S0142:1, UNKWN:1, L0369:1, L0763:1, L0769:1, L0646:1, L0648:1, L0662:1, L0650:1, L0775:1, L0653:1, L0776:1, L0656:1, L0782:1, L0809:1, L0519:1, S0052:1, L2657:1, H0144:1, L3823:1, H0520:1, H0547:1, H0660:1, S0380:1, L0742:1, L0439:1, L0750:1, L0777:1, S0031:1, H0445:1, S0434:1, H0665:1, H0667:1, S0194:1, S0276:1 and S0458:1.
39	HDPN86	1037893	49	AR212:4, AR235:3, AR266:2, AR221:2, AR207:2, AR205:2, AR216:2, AR168:2, AR282:2, AR257:2, AR181:1, AR311:1, AR271:1, AR161:1, AR264:1, AR165:1, AR172:1, AR295:1, AR164:1, AR162:1, AR176:1, AR163:1, AR171:1, AR285:1, AR289:1, AR277:1, AR238:1, AR089:1, AR234:1, AR211:1, H0542:4, S0418:3, H0543:3, S0038:2, H0341:1, L0018:1, H0069:1, H0090:1, H0056:1, H0494:1, H0522:1 and H0423:1.
40	HDPN86	895711	214	AR197:9, AR060:8, AR253:8, AR161:8, AR162:8, AR163:8, AR165:8, AR164:7, AR089:7, AR166:7, AR204:7, AR192:7, AR207:7, AR177:6, AR193:6, AR185:6, AR235:6, AR271:6, AR195:6, AR033:6, AR312:6, AR233:6, AR232:6, AR174:5, AR282:5, AR104:5, AR299:5, AR227:5, AR212:5, AR181:5, AR309:5, AR264:5, AR205:5, AR308:5, AR178:5, AR237:5, AR061:5, AR313:5, AR300:5, AR175:5, AR263:5, AR247:5, AR223:5, AR173:5, AR226:5, AR272:5, AR243:5, AR240:5, AR311:5, AR055:5, AR269:5, AR201:4, AR229:4, AR286:4, AR182:4, AR236:4, AR295:4, AR316:4, AR285:4, AR261:4, AR293:4, AR275:4, AR291:4, AR228:4, AR274:4, AR296:4, AR176:4, AR213:4, AR297:4, AR179:4, AR270:4,

				AR254:4, AR039:4, AR239:4, AR262:4, AR288:4, AR180:4, AR287:4, AR096:4, AR183:4, AR203:4, AR033:4, AR257:4, AR234:4, AR230:4, AR294:3, AR198:3, AR289:3, AR255:3, AR258:3, AR267:3, AR283:3, AR168:3, AR217:3, AR231:3, AR214:3, AR277:3, AR252:3, AR196:3, AR250:3, AR218:3, AR245:3, AR190:2, AR216:2, AR268:2, AR224:2, AR290:2, AR188:2, AR191:2, AR189:2, AR221:2, AR260:2, AR222:2, AR200:2, AR171:2, AR211:2, AR210:2, AR219:2, AR172:2, AR199:2, AR215:1, AR170:1, AR225:1, AR256:1, L0769:5, L0774:3, H0656:2, S0442:2, S0358:2, S0360:2, S0278:2, H0620:2, L0500:2, L0775:2, L0710:2, L0777:2, L0752:2, L0588:2, H0149:1, H0295:1, T0049:1, H0381:1, H0484:1, H0483:1, H0638:1, S0420:1, S0444:1, S0408:1, S0045:1, H0587:1, H0318:1, H0204:1, H0530:1, H0545:1, H0178:1, L0471:1, L0142:1, H0181:1, H0087:1, H0412:1, H0623:1, H0100:1, S0438:1, H0646:1, H0529:1, L0506:1, L0761:1, L0764:1, L0648:1, L0766:1, L0497:1, L0493:1, L0511:1, L0665:1, L2260:1, H0698:1, H0521:1, S0406:1, S3014:1, L0747:1, L0780:1, H0543:1 and H0422:1.
	HDPSB18	903816	215	
	HDPSB18	905414	216	
	HDPSB18	732097	217	
41	HDPSH53	1309174	51	AR214:47, AR207:47, AR263:40, AR222:34, AR169:33, AR235:33, AR212:31, AR213:30, AR223:29, AR170:29, AR311:29, AR309:28, AR168:28, AR195:27, AR264:26, AR192:26, AR216:24, AR295:24, AR171:24, AR245:24, AR217:23, AR172:23, AR198:22, AR308:22, AR271:22, AR161:21, AR162:21, AR163:21, AR252:21, AR261:21, AR288:21, AR053:20, AR166:20, AR197:20, AR242:20, AR201:20, AR033:19, AR205:19, AR177:19, AR312:19, AR193:19, AR165:18, AR240:18, AR229:18, AR277:18, AR254:18, AR164:18, AR225:17, AR246:17, AR297:17, AR236:17, AR285:16, AR291:16, AR275:16, AR238:16, AR272:16, AR174:15, AR296:15, AR274:15, AR232:15, AR286:14, AR282:14, AR230:13, AR181:13, AR211:13, AR250:13, AR226:13, AR239:13, AR287:12, AR227:12, AR283:12, AR247:12, AR237:12, AR289:12, AR215:12, AR316:12, AR204:12, AR210:12, AR176:12, AR180:12, AR293:12, AR231:11, AR270:11, AR300:11, AR299:11, AR262:11, AR175:11, AR185:11, AR243:11, AR196:11, AR258:10, AR269:10, AR200:10, AR313:10, AR089:10, AR253:10, AR183:10, AR294:10, AR268:9, AR061:9, AR104:9, AR234:9, AR199:9, AR096:9, AR179:9, AR218:8, AR178:8, AR233:8, AR257:8, AR219:8, AR255:8, AR266:8, AR290:8, AR267:8, AR188:8, AR228:8, AR189:7, AR055:7, AR060:7, AR203:7, AR191:7, AR256:7, AR039:7, AR260:6, AR182:6, AR190:6, L0804:2, H0521:2, L0021:1, H0617:1, H0623:1, L0648:1 and L0665:1.
	HDPSH53	1040056	218	
	HDPSH53	882768	219	
42	HDPSP01	1352280	52	AR169:8, AR235:5, AR265:5, AR180:4, AR176:4, AR161:4, AR163:4, AR311:4, AR162:4, AR269:3, AR165:3, AR172:3, AR171:3, AR222:3, AR166:3, AR183:3, AR225:3, AR168:3, AR282:3, AR224:3, AR245:3, AR272:3, AR196:3, AR223:3, AR297:3, AR221:2, AR182:2, AR298:2, AR164:2, AR261:2, AR257:2, AR170:2, AR270:2, AR289:2, AR216:2, AR173:2, AR191:2, AR214:2, AR287:2, AR296:2, AR242:2, AR228:2, AR247:2, AR295:2, AR255:2, AR192:2, AR240:2, AR174:2, AR227:2, AR053:2, AR275:2, AR203:2, AR266:2, AR288:2, AR215:2, AR277:2, AR239:2, AR291:2, AR264:2, AR263:2, AR285:2, AR230:2, AR190:2, AR310:2, AR189:2, AR274:1, AR181:1, AR286:1, AR179:1, AR226:1, AR246:1, AR231:1, AR178:1, AR175:1, AR238:1, AR273:1, AR290:1, AR243:1, AR200:1, AR293:1, AR294:1, AR309:1, AR284:1,

43	HDFSP01	689129	220	AR312:1, AR313:1, AR234:1, AR229:1, AR061:1, AR300:1, AR217:1, AR268:1, AR292:1, AR089:1, AR262:1, L0769:6, L0751:5, L0752:5, H0617:4, L0806:4, L0731:4, L0771:3, L0774:3, H0370:2, S0314:2, H0551:2, H0059:2, L0792:2, L0745:2, L0750:2, L0777:2, S0444:1, H0728:1, S0132:1, H0550:1, H0392:1, H0586:1, H0427:1, H0545:1, H0123:1, H0620:1, S0051:1, H0135:1, H0100:1, H0494:1, L0800:1, L0764:1, L0804:1, L0775:1, L0805:1, L0783:1, L0809:1, L0666:1, L0665:1, H0684:1, S0328:1, H0521:1, H0555:1, H0478:1, L0743:1, L0747:1, L0779:1, L0780:1, L0755:1 and S0434:1.
	HDFSP54	744440	53	AR263:53, AR207:53, AR214:51, AR169:41, AR224:40, AR222:38, AR223:37, AR195:36, AR235:32, AR217:31, AR212:31, AR168:30, AR172:30, AR311:29, AR053:28, AR192:28, AR196:28, AR171:27, AR198:27, AR213:27, AR221:27, AR161:26, AR264:26, AR252:26, AR162:25, AR170:25, AR210:25, AR245:24, AR033:23, AR225:23, AR216:23, AR163:22, AR089:22, AR261:22, AR215:21, AR271:21, AR177:21, AR181:21, AR104:21, AR295:20, AR218:20, AR236:19, AR193:19, AR191:19, AR211:19, AR197:18, AR185:18, AR055:18, AR219:18, AR201:18, AR240:18, AR165:17, AR316:17, AR166:17, AR299:17, AR164:17, AR060:17, AR253:17, AR174:16, AR242:16, AR288:16, AR199:16, AR205:16, AR246:15, AR282:15, AR039:15, AR238:15, AR308:15, AR229:15, AR175:14, AR188:14, AR285:14, AR297:14, AR254:14, AR189:14, AR232:14, AR277:13, AR300:13, AR287:13, AR243:13, AR230:13, AR312:13, AR291:13, AR286:12, AR204:12, AR250:12, AR226:12, AR173:12, AR200:12, AR239:12, AR176:12, AR274:11, AR296:11, AR096:11, AR309:11, AR203:11, AR231:11, AR270:11, AR247:11, AR293:11, AR190:11, AR283:10, AR258:10, AR267:10, AR234:10, AR289:10, AR262:10, AR178:10, AR268:10, AR227:10, AR313:10, AR180:10, AR237:10, AR179:9, AR257:9, AR182:9, AR269:9, AR255:9, AR233:9, AR260:9, AR061:9, AR183:9, AR290:8, AR275:8, AR272:8, AR266:8, AR294:7, AR256:7, AR228:6, L0740:8, L0662:3, L0659:3, L0663:3, S0422:2, L0646:2, L0766:2, L0439:2, L0779:2, H0171:1, S6024:1, S0110:1, S0360:1, H0411:1, H0455:1, S0474:1, H0510:1, S0438:1, L0637:1, L5565:1, L0771:1, L0773:1, L0794:1, L0804:1, L0787:1, L0665:1, L0438:1, H0521:1, S0406:1, L0754:1, L0755:1 and L0758:1.
44	HDFSP54	502472	221	AR253:15, AR052:14, AR213:11, AR184:11, AR230:11, AR228:9, AR170:9, AR250:8, AR168:8, AR254:8, AR225:6, AR297:6, AR053:6, AR251:5, AR267:5, AR248:5, AR268:5, AR221:5, AR096:5, AR214:5, AR238:5, AR178:5, AR249:5, AR216:5, AR173:5, AR239:5, AR236:5, AR166:5, AR182:4, AR161:4, AR162:4, AR217:4, AR269:4, AR282:4, AR163:4, AR224:4, AR222:4, AR237:4, AR296:4, AR257:4, AR263:4, AR244:4, AR227:4, AR258:4, AR252:4, AR291:4, AR229:4, AR219:4, AR287:4, AR290:4, AR275:4, AR264:4, AR183:4, AR175:4, AR223:4, AR199:4, AR308:4, AR171:3, AR194:3, AR246:3, AR277:3, AR260:3, AR288:3, AR240:3, AR274:3, AR191:3, AR284:3, AR243:3, AR312:3, AR293:3, AR179:3, AR233:3, AR300:3, AR261:3, AR218:3, AR165:3, AR061:3, AR231:3, AR033:3, AR298:3, AR316:3, AR164:3, AR181:3, AR255:3, AR270:3, AR189:3, AR313:3, AR309:3, AR234:2, AR186:2, AR247:2, AR195:2, AR285:2, AR232:2, AR292:2, AR185:2, AR226:2, AR180:2, AR299:2, AR289:2, AR271:2, AR193:2, AR089:2, AR203:2, AR311:2, AR060:2, AR172:2, AR310:2, AR215:2, AR177:2, AR266:2, AR262:2, AR272:2, AR188:2, AR196:2, AR169:1, AR212:1, AR210:1, AR055:1, AR283:1, AR190:1, AR241:1, AR295:1, AR286:1, AR201:1, AR294:1, AR104:1, AR256:1, AR205:1, AR039:1, H0677:47, H0521:14, H0295:3, H0587:3, H0556:2, H0656:2, H0638:2, H0411:2, S0002:2, L0766:2, L0776:2, L0659:2, L0809:2, H0670:2, H0522:2, S0404:2, L0743:2, L0744:2, L0740:2, L0731:2, S0134:1, H0657:1, H0254:1, S0476:1, S0278:1, H0486:1, H0575:1, H0606:1, H0135:1, H0561:1, S0438:1, L0761:1, L0768:1, L0655:1, L2261:1, S0374:1, H0690:1, H0435:1, H0658:1,
	HDFPUW68	812737	54	AR253:15, AR052:14, AR213:11, AR184:11, AR230:11, AR228:9, AR170:9, AR250:8, AR168:8, AR254:8, AR225:6, AR297:6, AR053:6, AR251:5, AR267:5, AR248:5, AR268:5, AR221:5, AR096:5, AR214:5, AR238:5, AR178:5, AR249:5, AR216:5, AR173:5, AR239:5, AR236:5, AR166:5, AR182:4, AR161:4, AR162:4, AR217:4, AR269:4, AR282:4, AR163:4, AR224:4, AR222:4, AR237:4, AR296:4, AR257:4, AR263:4, AR244:4, AR227:4, AR258:4, AR252:4, AR291:4, AR229:4, AR219:4, AR287:4, AR290:4, AR275:4, AR264:4, AR183:4, AR175:4, AR223:4, AR199:4, AR308:4, AR171:3, AR194:3, AR246:3, AR277:3, AR260:3, AR288:3, AR240:3, AR274:3, AR191:3, AR284:3, AR243:3, AR312:3, AR293:3, AR179:3, AR233:3, AR300:3, AR261:3, AR218:3, AR165:3, AR061:3, AR231:3, AR033:3, AR298:3, AR316:3, AR164:3, AR181:3, AR255:3, AR270:3, AR189:3, AR313:3, AR309:3, AR234:2, AR186:2, AR247:2, AR195:2, AR285:2, AR232:2, AR292:2, AR185:2, AR226:2, AR180:2, AR299:2, AR289:2, AR271:2, AR193:2, AR089:2, AR203:2, AR311:2, AR060:2, AR172:2, AR310:2, AR215:2, AR177:2, AR266:2, AR262:2, AR272:2, AR188:2, AR196:2, AR169:1, AR212:1, AR210:1, AR055:1, AR283:1, AR190:1, AR241:1, AR295:1, AR286:1, AR201:1, AR294:1, AR104:1, AR256:1, AR205:1, AR039:1, H0677:47, H0521:14, H0295:3, H0587:3, H0556:2, H0656:2, H0638:2, H0411:2, S0002:2, L0766:2, L0776:2, L0659:2, L0809:2, H0670:2, H0522:2, S0404:2, L0743:2, L0744:2, L0740:2, L0731:2, S0134:1, H0657:1, H0254:1, S0476:1, S0278:1, H0486:1, H0575:1, H0606:1, H0135:1, H0561:1, S0438:1, L0761:1, L0768:1, L0655:1, L2261:1, S0374:1, H0690:1, H0435:1, H0658:1,

45	HDPXY01	879048	55	<p>H0696:1, H0678:1, L0779:1, L0752:1, H0445:1, S0434:1 and S0436:1.</p> <p>AR207:8, AR165:8, AR245:8, AR214:8, AR164:8, AR275:8, AR163:8, AR162:8, AR263:8, AR169:8, AR195:7, AR166:7, AR274:7, AR161:7, AR309:7, AR272:7, AR170:7, AR308:6, AR311:6, AR198:6, AR089:6, AR060:6, AR197:6, AR192:6, AR264:6, AR039:6, AR177:6, AR243:6, AR235:5, AR213:5, AR096:5, AR282:5, AR168:5, AR313:5, AR222:5, AR240:5, AR204:5, AR217:5, AR261:5, AR193:4, AR312:4, AR104:4, AR246:4, AR176:4, AR055:4, AR299:4, AR171:4, AR283:4, AR271:4, AR174:4, AR316:4, AR178:4, AR295:4, AR053:4, AR205:4, AR185:4, AR237:4, AR033:4, AR247:4, AR300:4, AR266:4, AR257:3, AR270:3, AR181:3, AR293:3, AR233:3, AR250:3, AR225:3, AR288:3, AR291:3, AR216:3, AR296:3, AR201:3, AR286:3, AR285:3, AR268:3, AR228:3, AR297:3, AR254:3, AR294:3, AR252:3, AR269:3, AR229:3, AR287:3, AR232:3, AR061:3, AR234:3, AR289:3, AR183:3, AR227:3, AR231:3, AR211:3, AR267:3, AR230:3, AR255:3, AR236:3, AR239:2, AR226:2, AR179:2, AR200:2, AR182:2, AR262:2, AR175:2, AR203:2, AR180:2, AR290:2, AR196:2, AR199:2, AR189:2, AR258:2, AR173:2, AR210:2, AR191:2, AR238:1, AR190:1, AR253:1, AR215:1, AR172:1, L0646:4, L0666:4, L0662:3, L0749:3, H0661:2, H0620:2, H0617:2, H0144:2, L0777:2, L0731:2, H0170:1, S0360:1, S0046:1, L0717:1, H0013:1, H0052:1, H0039:1, H0622:1, H0606:1, H0673:1, L0769:1, L0796:1, L5565:1, L5566:1, L0764:1, L0648:1, L0381:1, L0805:1, L0659:1, L0789:1, L0792:1, L0663:1, L0665:1, H0689:1, H0660:1, H0648:1, H0539:1, H0521:1, L0779:1 and L0603:1.</p>
	HDPXY01	904768	222	
	HDPXY01	895716	223	
	HDPXY01	895715	224	
46	HDTBD53	972757	56	<p>AR242:4, AR246:4, AR250:3, AR263:3, AR195:3, AR272:3, AR264:3, AR170:3, AR282:3, AR215:3, AR163:3, AR162:3, AR235:3, AR089:3, AR198:3, AR165:3, AR161:3, AR197:2, AR266:2, AR053:2, AR169:2, AR212:2, AR205:2, AR285:2, AR243:2, AR312:2, AR240:2, AR270:2, AR221:2, AR296:2, AR213:2, AR178:2, AR216:2, AR261:2, AR214:2, AR299:2, AR247:2, AR060:2, AR164:2, AR267:1, AR183:1, AR237:1, AR172:1, AR286:1, AR179:1, AR166:1, AR291:1, AR311:1, AR316:1, AR313:1, AR288:1, AR171:1, AR188:1, AR268:1, AR269:1, AR308:1, AR173:1, AR287:1, AR297:1, AR033:1, L0439:17, L0731:17, L0747:16, L0766:13, S0360:8, L0770:8, L0659:8, L0754:8, H0553:7, L0663:7, L0749:7, L0758:7, H0486:6, S0192:6, L0662:5, L0105:4, H0644:4, L0438:4, H0547:4, L0748:4, L0751:4, L0752:4, L0755:4, L0599:4, H0542:4, H0556:3, H0662:3, S0420:3, H0599:3, H0050:3, H0266:3, H0622:3, H0135:3, H0551:3, H0529:3, L0783:3, H0519:3, H0670:3, H0521:3, H0555:3, L0750:3, H0717:2, H0663:2, H0638:2, S0476:2, H0592:2, H0013:2, H0598:2, H0090:2, H0038:2, H0040:2, H0494:2, S0440:2, S0344:2, L0638:2, L0761:2, L0764:2, L0649:2, L0774:2, L0775:2, L0657:2, L0787:2, L0666:2, H0144:2, L0565:2, H0659:2, S0044:2, S0194:2, H0422:2, H0170:1, S0040:1, H0713:1, T0049:1, S0134:1, S0110:1, H0402:1, S0356:1, S0442:1, S0354:1, S0376:1, S0444:1, S0410:1, S0300:1, H0369:1, H0261:1, H0549:1, H0550:1, S0222:1, H0586:1, H0587:1, L0586:1, T0060:1, H0244:1, S0280:1, L0021:1, H0025:1, H0421:1, H0309:1, L0040:1, H0544:1, L0471:1, H0024:1, L0163:1, S0388:1, H0188:1, H0687:1, S0003:1, H0615:1, H0039:1, H0030:1, H0674:1, H0212:1, H0068:1, S0366:1, H0163:1, H0591:1, H0634:1, H0616:1, H0412:1, H0413:1, H0623:1, H0561:1, H0641:1, H0647:1, H0652:1, S0144:1, S0142:1, S0002:1, L0369:1, L0769:1, L5575:1, L5565:1, L3905:1, L5566:1, L0772:1, L0800:1, L0771:1, L0521:1, L0768:1, L0794:1, L0381:1, L0806:1, L0654:1, L0655:1, L0636:1, L0384:1, L0809:1, L0528:1, L0788:1, L0789:1, S0126:1, H0689:1, H0682:1, H0658:1, H0648:1, S0328:1, H0539:1, H0696:1, S0406:1, L0740:1, L0757:1, L0603:1, H0665:1,</p>

				S0196:1, H0423:1 and S0460:1.
47	HDTBD53 HDTBV77	906342 785879	225 57	AR183:7, AR184:5, AR207:4, AR245:4, AR270:4, AR182:4, AR214:4, AR172:4, AR223:4, AR263:3, AR272:3, AR180:3, AR176:3, AR268:3, AR309:3, AR175:3, AR164:3, AR282:3, AR166:3, AR225:3, AR216:3, AR308:3, AR052:3, AR247:3, AR289:3, AR165:3, AR266:2, AR312:2, AR162:2, AR169:2, AR291:2, AR297:2, AR284:2, AR193:2, AR205:2, AR257:2, AR296:2, AR267:2, AR195:2, AR265:2, AR171:2, AR217:2, AR298:2, AR246:2, AR202:2, AR264:2, AR229:2, AR238:2, AR277:2, AR213:2, AR178:2, AR230:2, AR313:2, AR243:2, AR288:2, AR311:2, AR161:2, AR235:2, AR253:2, AR168:2, AR290:2, AR294:2, AR215:2, AR242:2, AR286:2, AR181:2, AR212:2, AR287:2, AR173:2, AR221:2, AR039:2, AR163:2, AR200:2, AR061:2, AR170:2, AR274:2, AR053:2, AR089:2, AR236:2, AR228:2, AR293:2, AR199:2, AR310:1, AR196:1, AR174:1, AR300:1, AR240:1, AR096:1, AR231:1, AR271:1, AR201:1, AR259:1, AR177:1, AR060:1, AR261:1, AR237:1, AR316:1, AR179:1, AR192:1, AR262:1, AR190:1, AR234:1, AR295:1, AR285:1, AR239:1, AR258:1, AR299:1, AR204:1, AR233:1, AR197:1, AR211:1, AR254:1 H0553:3, H0717:2, H0486:1, H0427:1, H0081:1, H0014:1, S0388:1, H0112:1, H0030:1, H0644:1, H0488:1, H0519:1, L0759:1, H0543:1 and H0506:1. AR200:16, AR311:15, AR272:13, AR264:12, AR165:11, AR164:11, AR188:11, AR312:10, AR166:10, AR211:10, AR104:10, AR282:10, AR191:10, AR246:9, AR096:9, AR210:9, AR189:9, AR162:9, AR199:9, AR161:9, AR163:9, AR274:9, AR196:9, AR308:8, AR174:8, AR089:8, AR240:8, AR309:7, AR175:7, AR218:7, AR190:7, AR295:7, AR203:7, AR316:7, AR299:7, AR313:6, AR285:6, AR247:6, AR185:6, AR275:6, AR263:6, AR183:6, AR245:6, AR060:6, AR181:6, AR212:6, AR039:6, AR053:5, AR288:5, AR269:5, AR268:5, AR243:5, AR291:5, AR290:5, AR033:5, AR173:5, AR238:5, AR267:5, AR231:5, AR176:5, AR271:5, AR300:4, AR237:4, AR205:4, AR266:4, AR177:4, AR182:4, AR223:4, AR270:4, AR296:4, AR213:4, AR277:4, AR229:4, AR178:4, AR261:4, AR171:4, AR297:3, AR195:3, AR287:3, AR239:3, AR232:3, AR230:3, AR255:3, AR234:3, AR226:3, AR257:3, AR286:3, AR293:3, AR258:3, AR236:3, AR193:3, AR262:3, AR168:3, AR180:3, AR252:3, AR289:3, AR221:3, AR225:3, AR250:3, AR179:3, AR294:3, AR216:2, AR201:2, AR198:2, AR233:2, AR061:2, AR172:2, AR222:2, AR055:2, AR170:2, AR215:2, AR256:2, AR228:2, AR227:2, AR224:2, AR214:1, AR283:1, AR197:1, AR260:1, AR235:1, AR253:1 L0659:5, L0666:4, L0665:4, L2634:3, L0471:2, H0031:2, L0646:2, L0794:2, L0766:2, L0657:2, H0265:1, H0685:1, L0785:1, S0356:1, S0376:1, S0360:1, H0742:1, S0007:1, H0747:1, H0486:1, L2540:1, H0069:1, H0025:1, H0457:1, H0252:1, H0428:1, L0055:1, H0038:1, S0344:1, L0625:1, L0761:1, L0800:1, L0553:1, L0649:1, L0803:1, L0650:1, L0606:1, L3872:1, L0791:1, L0663:1, L0664:1, H0684:1, H0435:1, H0648:1, S0380:1, L3832:1, L0749:1, L0786:1, L0780:1, L0755:1, L0759:1, L0596:1, L0601:1, H0543:1 and H0422:1.
	HDTDQ23	879009	226	
	HDTDQ23	751707	227	
49	HE2DE47	619852	59	AR224:15, AR223:15, AR217:12, AR214:12, AR222:11, AR225:11, AR172:9, AR216:9, AR215:9, AR221:8, AR171:7, AR162:7, AR168:7, AR161:7, AR264:7, AR196:7, AR176:6, AR163:6, AR165:6, AR263:6, AR246:6, AR164:6, AR309:6, AR166:6, AR193:6, AR170:6, AR313:5, AR096:5, AR089:5, AR250:5, AR169:5, AR242:5, AR312:5, AR261:5, AR254:5, AR295:5, AR245:5, AR180:5, AR189:5, AR271:5, AR091:5, AR291:5, AR274:5, AR177:5, AR316:4, AR178:4, AR210:4, AR272:4, AR253:4, AR267:4, AR308:4, AR270:4, AR282:4, AR229:4, AR174:4, AR175:4, AR188:4, AR268:4, AR190:4, AR288:4, AR183:4, AR060:4, AR297:4, AR181:4, AR192:4, AR173:4, AR255:4, AR195:4, AR296:4, AR179:4, AR285:4, AR284:4, AR184:4, AR294:4, AR293:4, AR292:4, AR291:4, AR290:4, AR289:4, AR288:4, AR287:4, AR286:4, AR285:4,

	HE2DE47	382025	228	AR311:4, AR199:4, AR197:4, AR205:4, AR231:4, AR237:4, AR243:4, AR239:4, AR299:4, AR300:3, AR236:3, AR182:3, AR257:3, AR212:3, AR269:3, AR218:3, AR290:3, AR238:3, AR275:3, AR262:3, AR203:3, AR198:3, AR266:3, AR053:3, AR287:3, AR210:3, AR228:3, AR293:3, AR247:3, AR213:3, AR252:3, AR240:3, AR219:3, AR185:3, AR226:3, AR200:3, AR235:3, AR233:3, AR204:3, AR207:3, AR258:3, AR286:3, AR039:3, AR283:2, AR260:2, AR232:2, AR277:2, AR230:2, AR294:2, AR289:2, AR061:2, AR234:2, AR055:2, AR227:2, AR256:2, AR211:2, AR104:2, L0439:10, L0747:9, L0766:8, L0770:5, L0666:4, L0754:4, L0777:4, L0659:3, L0783:3, S0126:3, L0543:3, L0483:2, L0764:2, L0662:2, L0768:2, L0665:2, L0438:2, L0748:2, L0756:2, L0755:2, L0758:2, L0759:2, L0170:1, L0049:1, L0341:1, L0029:1, L0661:1, L0306:1, L0408:1, L0580:1, L0045:1, L0431:1, L0455:1, L0586:1, L0622:1, L0575:1, L0004:1, L0581:1, L0421:1, L0263:1, L0569:1, L0015:1, L0003:1, L0615:1, L0142:1, L0090:1, L0625:1, L0598:1, L0529:1, L0769:1, L0667:1, L0646:1, L0774:1, L0375:1, L0657:1, L0519:1, L0664:1, L0144:1, L0374:1, L0547:1, L0435:1, L0666:1, L0380:1, L0521:1, L0404:1, L0555:1, L0749:1, L0750:1, L0779:1, L0592:1, L0608:1, L0026:1 and L0542:1.
50	HE2NV57	740750	60	AR235:6, AR282:4, AR309:4, AR171:4, AR270:4, AR178:3, AR272:3, AR245:3, AR269:3, AR291:3, AR169:3, AR268:3, AR213:3, AR215:3, AR254:3, AR267:3, AR289:3, AR274:3, AR236:3, AR175:3, AR053:3, AR228:3, AR261:3, AR242:2, AR161:2, AR181:2, AR308:2, AR300:2, AR257:2, AR238:2, AR282:2, AR182:2, AR266:2, AR204:2, AR237:2, AR170:2, AR288:2, AR290:2, AR188:2, AR297:2, AR168:2, AR262:2, AR162:2, AR163:2, AR296:2, AR233:2, AR210:2, AR285:2, AR295:2, AR264:2, AR293:2, AR165:2, AR229:2, AR201:2, AR189:2, AR250:2, AR164:2, AR221:2, AR195:2, AR222:2, AR223:2, AR239:2, AR231:2, AR294:2, AR166:2, AR191:2, AR179:2, AR255:2, AR271:2, AR287:2, AR212:2, AR234:2, AR299:2, AR225:2, AR203:2, AR246:2, AR200:2, AR205:1, AR089:1, AR173:1, AR176:1, AR240:1, AR286:1, AR193:1, AR199:1, AR258:1, AR196:1, AR232:1, AR096:1, AR243:1, AR312:1, AR185:1, AR061:1, AR183:1, AR230:1, AR060:1, L0414:3, L0805:3, L0412:3, L0457:2, L0756:2, L0170:1, L0645:1, L0455:1, L0421:1, L0100:1, L0803:1, L0052:1, L0374:1, L0696:1 and L0743:1.
51	HE2PH36	570903	61	AR263:75, AR171:60, AR309:59, AR264:59, AR252:58, AR168:57, AR223:54, AR169:49, AR308:46, AR311:44, AR214:44, AR053:42, AR172:38, AR312:37, AR170:37, AR225:36, AR246:36, AR212:34, AR272:33, AR217:32, AR197:32, AR245:32, AR222:31, AR213:30, AR207:30, AR224:30, AR198:27, AR096:27, AR196:26, AR195:26, AR313:25, AR205:25, AR216:24, AR201:23, AR218:22, AR215:21, AR254:21, AR235:21, AR165:20, AR261:20, AR253:20, AR274:20, AR243:20, AR221:19, AR164:19, AR316:19, AR275:19, AR250:19, AR192:18, AR166:18, AR161:18, AR162:18, AR177:18, AR163:18, AR271:18, AR174:17, AR039:17, AR200:17, AR089:17, AR240:16, AR296:16, AR219:16, AR188:16, AR193:16, AR033:15, AR295:15, AR185:14, AR189:14, AR229:14, AR060:14, AR299:13, AR236:13, AR203:13, AR242:13, AR183:13, AR190:13, AR210:12, AR104:12, AR282:12, AR178:12, AR300:12, AR181:12, AR175:12, AR268:12, AR199:12, AR226:11, AR211:11, AR191:11, AR269:11, AR173:11, AR204:10, AR277:10, AR270:10, AR180:10, AR297:10, AR247:10, AR288:10, AR290:9, AR179:9, AR285:9, AR291:9, AR176:9, AR262:9, AR239:9, AR283:9, AR238:8, AR182:8, AR267:8, AR237:8, AR055:8, AR287:8, AR257:8, AR289:8, AR231:7, AR293:7, AR258:7, AR255:7, AR232:7, AR286:7, AR230:7, AR234:7, AR256:7, AR266:6, AR233:6, AR227:6, AR294:6, AR228:5, AR260:5, AR061:4, L0171:1, L0114:1 and L0356:1.
52	HE8DS15	847060	62	AR180:17, AR181:15, AR178:15, AR096:14, AR182:13, AR179:13, AR246:13, AR175:13, AR191:12, AR183:12, AR190:12, AR240:11, AR268:10, AR270:10, AR174:10, AR269:10, AR173:9, AR243:9, AR176:9, AR060:8, AR185:7, AR255:7.

53	HE9HY07	420063	63	<p>AR189:7, AR201:7, AR192:7, AR039:7, AR193:7, AR197:7, AR257:7, AR055:6, AR295:6, AR290:6, AR296:6, AR299:6, AR285:6, AR288:6, AR207:5, AR291:5, AR188:5, AR254:5, AR287:5, AR297:5, AR218:5, AR294:5, AR316:5, AR235:5, AR293:5, AR242:4, AR264:4, AR089:4, AR236:4, AR177:4, AR195:4, AR161:4, AR198:4, AR271:4, AR162:4, AR163:4, AR204:4, AR205:4, AR165:4, AR275:4, AR267:4, AR262:4, AR164:4, AR260:4, AR286:3, AR261:3, AR300:3, AR104:3, AR289:3, AR169:3, AR313:3, AR168:3, AR033:3, AR266:3, AR238:3, AR253:3, AR247:3, AR222:3, AR258:3, AR233:3, AR228:3, AR200:3, AR312:3, AR166:3, AR229:2, AR224:2, AR272:2, AR199:2, AR231:2, AR250:2, AR203:2, AR061:2, AR263:2, AR237:2, AR053:2, AR219:2, AR226:2, AR230:2, AR282:2, AR277:2, AR221:2, AR274:2, AR213:2, AR283:2, AR232:2, AR217:2, AR309:2, AR227:2, AR239:2, AR214:2, AR256:2, AR234:2, AR212:2, AR308:2, AR171:1, AR216:1, AR225:1, AR252:1, AR170:1, L0779:8, L0770:7, L0731:7, L0662:6, L0803:5, L0599:5, L0758:4, H0739:3, H0624:3, H0486:3, H0615:3, L0748:3, L0750:3, H0713:2, S0222:2, H0575:2, H0050:2, H0031:2, H0553:2, S0036:2, H0038:2, S0422:2, L0804:2, L0774:2, L0775:2, L0647:2, L0438:2, L0742:2, L0743:2, L0747:2, L0605:2, L0485:2, H0171:1, H0177:1, S0442:1, H0208:1, H0411:1, H0586:1, L0365:1, H0013:1, H0156:1, H0108:1, H0581:1, S0049:1, H0194:1, H0572:1, H0123:1, L0471:1, H0024:1, H0373:1, S0051:1, S6028:1, H0188:1, H0644:1, H0628:1, H0383:1, H0316:1, T0067:1, L0768:1, L0794:1, L0375:1, L0806:1, L0659:1, L0532:1, L0665:1, H0144:1, H0691:1, S0126:1, H0660:1, H0648:1, S0328:1, S0378:1, S0380:1, H0436:1, S0028:1, L0749:1, L0756:1, L0759:1, H0444:1, S0242:1 and H0352:1.</p>
54	HEOMQ63	603533	64	<p>AR172:5, AR201:4, AR266:4, AR170:4, AR269:4, AR182:4, AR168:4, AR039:4, AR176:4, AR228:4, AR169:4, AR236:4, AR254:4, AR165:4, AR257:3, AR164:3, AR233:3, AR253:3, AR191:3, AR166:3, AR183:3, AR181:3, AR229:3, AR264:3, AR268:3, AR178:3, AR231:3, AR237:3, AR270:3, AR180:3, AR283:3, AR179:3, AR053:3, AR197:3, AR190:3, AR096:3, AR060:3, AR239:3, AR055:3, AR177:3, AR238:3, AR255:3, AR193:3, AR312:3, AR061:3, AR250:3, AR235:3, AR267:3, AR230:3, AR185:3, AR288:2, AR175:2, AR293:2, AR196:2, AR262:2, AR246:2, AR316:2, AR287:2, AR033:2, AR294:2, AR089:2, AR247:2, AR313:2, AR173:2, AR243:2, AR300:2, AR234:2, AR271:2, AR290:2, AR199:2, AR297:2, AR277:2, AR286:2, AR224:2, AR232:2, AR309:2, AR289:2, AR200:2, AR174:2, AR296:2, AR232:2, AR163:2, AR226:2, AR211:2, AR285:2, AR222:2, AR299:2, AR261:2, AR189:2, AR205:2, AR162:2, AR203:2, AR295:2, AR240:2, AR272:2, AR171:2, AR260:1, AR214:1, AR216:1, AR311:1, AR188:1, AR212:1, AR291:1, AR221:1, AR272:1, AR308:1, AR161:1, AR245:1, H0615:1 and H0144:1.</p>
55	HEPAB80	1307790	65	<p>AR039:7, AR221:4, AR271:4, AR309:3, AR283:3, AR252:3, AR171:3, AR162:3, AR180:3, AR163:3, AR243:3, AR217:3, AR161:3, AR176:3, AR165:3, AR213:3, AR282:3, AR164:3, AR291:3, AR296:3, AR245:2, AR235:2, AR089:2, AR263:2, AR231:2, AR246:2, AR297:2, AR313:2, AR224:2, AR172:2, AR195:2, AR174:2, AR286:2, AR168:2, AR060:2, AR289:2, AR201:2, AR294:2, AR177:2, AR300:2, AR225:2, AR211:2, AR179:2, AR229:1, AR240:1, AR205:1, AR239:1, AR285:1, AR299:1, AR257:1, AR264:1, AR212:1, AR166:1, AR316:1, AR287:1, AR227:1, AR247:1, AR270:1, AR170:1, AR216:1, AR096:1, AR237:1, AR104:1, L0766:3, L0777:2, S0116:1, S0376:1, H0457:1, S0440:1, L0771:1, L0803:1, L0804:1, L0657:1, L0659:1, H0525:1, S0406:1 and L0750:1.</p>
				<p>AR191:117, AR190:89, AR245:79, AR271:76, AR175:71, AR178:66, AR189:63, AR240:60, AR246:60, AR269:58, AR174:58, AR188:56, AR196:55, AR180:54, AR197:54, AR176:53, AR183:53, AR211:52, AR274:50, AR182:47, AR177:47, AR207:45, AR192:44, AR235:44, AR179:43, AR181:41, AR268:41, AR312:40, AR264:40, AR261:39, AR165:39, AR166:39, AR263:38, AR250:38, AR164:37, AR290:37, AR252:37, AR266:35, AR200:34, AR291:34, AR210:34, AR285:33,</p>

				AR255:32, AR243:32, AR295:31, AR247:30, AR254:29, AR308:28, AR236:28, AR275:28, AR201:28, AR173:28, AR033:27, AR163:26, AR267:26, AR238:26, AR195:25, AR198:25, AR253:25, AR287:25, AR193:25, AR161:24, AR260:24, AR311:24, AR288:23, AR297:23, AR162:21, AR205:21, AR294:21, AR239:20, AR256:20, AR313:20, AR289:20, AR096:20, AR060:20, AR262:19, AR300:18, AR258:18, AR185:18, AR226:17, AR272:17, AR257:17, AR219:17, AR232:16, AR039:16, AR316:16, AR293:15, AR237:15, AR296:15, AR309:15, AR282:14, AR224:14, AR231:13, AR053:13, AR233:13, AR203:13, AR229:13, AR286:12, AR299:12, AR199:12, AR172:11, AR222:11, AR221:11, AR212:11, AR061:11, AR089:11, AR277:10, AR169:10, AR230:10, AR242:10, AR104:10, AR223:10, AR213:10, AR228:9, AR168:9, AR218:9, AR170:8, AR204:8, AR225:8, AR227:7, AR216:6, AR214:6, AR055:5, AR171:5, AR283:5, AR215:3, AR217:2, H0150:1
	HEPAB80	570048	229	
56	HFABH95	566712	66	AR173:16, AR162:14, AR161:14, AR163:13, AR180:12, AR178:11, AR257:11, AR262:11, AR191:11, AR196:10, AR181:10, AR226:10, AR174:10, AR297:10, AR255:9, AR165:9, AR238:9, AR313:9, AR287:8, AR164:8, AR199:8, AR258:8, AR166:8, AR176:8, AR240:8, AR236:8, AR179:8, AR183:8, AR261:8, AR264:7, AR288:7, AR260:7, AR225:7, AR182:7, AR242:7, AR230:7, AR200:7, AR089:7, AR229:7, AR247:7, AR203:7, AR189:7, AR227:7, AR234:6, AR188:6, AR061:6, AR237:6, AR231:6, AR175:6, AR228:6, AR269:6, AR270:6, AR233:6, AR300:6, AR296:6, AR299:6, AR221:5, AR254:5, AR239:5, AR293:5, AR060:5, AR193:5, AR223:5, AR185:5, AR190:5, AR217:5, AR232:5, AR171:5, AR215:5, AR245:5, AR212:5, AR216:5, AR274:5, AR294:5, AR290:5, AR282:4, AR291:4, AR266:4, AR316:4, AR169:4, AR268:4, AR204:4, AR285:4, AR267:4, AR218:4, AR210:4, AR096:4, AR177:4, AR311:4, AR246:4, AR184:4, AR277:4, AR170:4, AR286:4, AR272:4, AR192:4, AR033:4, AR235:4, AR312:4, AR308:4, AR275:3, AR263:3, AR053:3, AR214:3, AR253:3, AR309:3, AR172:3, AR202:3, AR201:3, AR168:3, AR197:3, AR211:3, AR224:3, AR289:3, AR198:3, AR213:3, AR219:3, AR195:3, AR052:3, AR104:3, AR207:3, AR295:2, AR256:2, AR222:2, AR205:2, AR271:2, AR039:2, AR186:2, AR243:2, AR283:2, AR055:2, AR273:2, AR206:1, AR244:1, AR252:1, S6024:1, S0430:1, H0039:1, H0056:1 and H0660:1.
57	HFAEF57	534142	67	AR241:14, AR161:14, AR162:13, AR163:13, AR313:10, AR242:10, AR201:10, AR165:9, AR164:9, AR252:9, AR197:9, AR194:9, AR053:9, AR166:9, AR198:8, AR245:8, AR236:8, AR192:8, AR176:8, AR206:8, AR250:8, AR212:8, AR235:8, AR196:7, AR271:7, AR186:7, AR052:7, AR173:7, AR204:7, AR246:7, AR253:7, AR263:7, AR207:7, AR191:7, AR275:7, AR180:7, AR226:7, AR272:7, AR247:7, AR181:6, AR299:6, AR089:6, AR195:6, AR293:6, AR244:6, AR193:6, AR312:6, AR213:6, AR229:6, AR039:6, AR280:6, AR251:6, AR188:6, AR202:6, AR309:6, AR287:6, AR264:6, AR238:6, AR273:6, AR174:6, AR177:6, AR240:6, AR257:6, AR237:5, AR243:5, AR061:5, AR233:5, AR228:5, AR261:5, AR184:5, AR182:5, AR262:5, AR185:5, AR300:5, AR270:5, AR096:5, AR189:5, AR190:5, AR274:5, AR248:5, AR205:5, AR315:5, AR183:5, AR175:5, AR288:5, AR169:5, AR033:5, AR297:5, AR269:5, AR199:5, AR178:5, AR249:5, AR295:5, AR308:4, AR055:4, AR223:4, AR254:4, AR060:4, AR104:4, AR216:4, AR296:4, AR227:4, AR290:4, AR221:4, AR266:4, AR232:4, AR239:4, AR311:4, AR179:4, AR298:4, AR200:4, AR231:4, AR285:4, AR255:4, AR268:4, AR286:4, AR267:4, AR282:4, AR230:4, AR294:4, AR316:4, AR214:4, AR234:4, AR168:4, AR277:3, AR238:3, AR291:3, AR170:3, AR217:3, AR203:3, AR292:3, AR171:3, AR289:3, AR310:3, AR265:3, AR215:3, AR259:3, AR284:3, AR225:2, AR281:2, AR219:2, AR218:2, AR283:2, AR222:2, AR314:2, AR260:2, AR210:2, AR172:2, AR224:2, AR211:1, AR256:1, S6024:1
58	HFCEB37	411345	68	AR282:18, AR176:14, AR269:13, AR183:11, AR173:11, AR201:11, AR182:11, AR252:11, AR204:11, AR193:11, AR294:10, AR243:9, AR233:9, AR236:9, AR197:9, AR162:9, AR161:9, AR270:9, AR163:9, AR178:9, AR165:9, AR217:9, AR225:9,

59	HFFAD59	520369	69	AR175:9, AR231:9, AR181:9, AR089:8, AR215:8, AR164:8, AR207:8, AR170:8, AR216:8, AR166:8, AR172:8, AR268:8, AR221:8, AR291:8, AR169:8, AR179:8, AR235:8, AR205:8, AR224:8, AR039:7, AR180:7, AR060:7, AR242:7, AR267:7, AR228:7, AR168:7, AR223:7, AR290:7, AR198:7, AR296:7, AR285:7, AR287:7, AR316:7, AR174:7, AR257:7, AR237:7, AR271:7, AR313:7, AR303:7, AR229:7, AR192:7, AR255:7, AR250:7, AR288:7, AR191:6, AR254:6, AR096:6, AR177:6, AR055:6, AR195:6, AR246:6, AR238:6, AR222:6, AR240:6, AR239:6, AR262:6, AR293:6, AR247:6, AR300:6, AR289:6, AR264:6, AR214:6, AR299:6, AR188:6, AR297:6, AR190:6, AR171:6, AR253:6, AR200:6, AR295:5, AR053:5, AR185:5, AR226:5, AR196:5, AR309:5, AR274:5, AR312:5, AR234:5, AR189:5, AR286:5, AR061:4, AR308:4, AR227:4, AR275:4, AR104:4, AR263:4, AR258:4, AR218:4, AR203:4, AR232:4, AR272:4, AR230:4, AR277:4, AR256:4, AR212:3, AR199:3, AR210:3, AR211:3, AR311:3, AR283:3, AR219:3, AR213:3, AR260:2, S0222:2, L0438:2, S0134:1, S0045:1, H0747:1, H0013:1, H0009:1, S6028:1, L0598:1, S0052:1, H0696:1, S0146:1, L0439:1, L0777:1 and L0366:1.
60	HFGAD82	513669	70	AR225:3, AR162:3, AR271:3, AR183:2, AR180:2, AR282:2, AR217:2, AR254:2, AR198:2, AR291:2, AR175:2, AR288:2, AR177:2, AR201:2, AR163:2, AR267:2, AR224:2, AR295:2, AR266:2, AR312:2, AR173:2, AR277:2, AR311:2, AR238:2, AR033:2, AR193:2, AR228:2, AR294:2, AR195:2, AR275:1, AR243:1, AR272:1, AR205:1, AR174:1, AR213:1, AR293:1, AR308:1, AR229:1, AR233:1, AR285:1, AR247:1, AR269:1, AR181:1, AR182:1, AR230:1, AR296:1, AR185:1, AR240:1, AR297:1, AR258:1 H0172:2
61	HFIUR10	532060	71	AR104:18, AR033:14, AR222:7, AR162:6, AR161:6, AR163:6, AR309:6, AR207:5, AR224:5, AR282:5, AR178:4, AR053:4, AR274:4, AR089:4, AR195:4, AR272:4, AR165:4, AR289:3, AR164:3, AR166:3, AR308:3, AR246:3, AR312:3, AR183:3, AR223:3, AR197:3, AR192:3, AR252:3, AR277:3, AR261:3, AR039:3, AR245:3, AR176:3, AR096:3, AR170:3, AR296:3, AR168:2, AR266:2, AR180:2, AR299:2, AR201:2, AR060:2, AR311:2, AR316:2, AR264:2, AR285:2, AR287:2, AR270:2, AR294:2, AR271:2, AR288:2, AR225:2, AR293:2, AR290:2, AR171:2, AR286:2, AR291:2, AR295:2, AR216:2, AR297:2, AR275:2, AR247:2, AR191:2, AR185:2, AR229:2, AR205:2, AR300:2, AR257:2, AR283:2, AR269:2, AR182:2, AR061:1, AR193:1, AR213:1, AR236:1, AR237:1, AR313:1, AR217:1, AR268:1, AR175:1, AR179:1, AR233:1 L0439:22, L0756:12, S0222:11, L0438:10, S0414:8, S0051:8, L0598:7, S0412:6, L3657:5, L0770:5, H0144:5, L0638:4, H0170:3, S0282:3, H0438:3, S0036:3, L0740:3, S0031:3, S0260:3, S0007:2, H0441:2, L3655:2, S0049:2, H0052:2, H0178:2, H0051:2, S6028:2, S0038:2, L0759:2, L0589:2, L0366:2, H0583:1, S0001:1, H0662:1, L3658:1, L0476:1, S0300:1, H0406:1, S6014:1, H0455:1, H0013:1, H0244:1, H0390:1, S0346:1, H0327:1, H0041:1, H0563:1, H0567:1, S0050:1, S0048:1, S0388:1, S0039:1, L0796:1, L5575:1, L0630:1, L0767:1, L0794:1, L0774:1, L0805:1, L0809:1, L0788:1, L0792:1, L0666:1, S0374:1, H0658:1, S0330:1, L0777:1, L0758:1, L0592:1 and L0593:1.
61	HFIUR10	532060	71	AR169:4, AR165:4, AR161:3, AR163:3, AR215:3, AR216:3, AR166:3, AR246:3, AR252:3, AR313:3, AR089:3, AR311:3, AR266:2, AR270:2, AR180:2, AR261:2, AR164:2, AR224:2, AR269:2, AR096:2, AR236:2, AR289:2, AR201:2, AR297:2, AR312:2, AR205:2, AR217:2, AR255:2, AR172:2, AR240:2, AR216:2, AR183:2, AR309:2, AR173:2, AR291:2, AR176:2, AR196:2, AR295:1, AR264:1, AR225:1, AR299:1, AR033:1, AR174:1, AR257:1, AR282:1, AR060:1, AR230:1, AR178:1, AR177:1, AR316:1, AR168:1, AR243:1, AR283:1, AR268:1, AR277:1, AR189:1, AR290:1, AR247:1, AR055:1, AR308:1, AR288:1, AR300:1, AR237:1, AR185:1 H0265:2, L0591:2, H0556:1, S0356:1, H0271:1, H0622:1, S0428:1, S0434:1 and S0196:1.

62	HFTBM50	545012	72	AR300:4, AR104:4, AR240:4, AR277:3, AR060:3, AR185:3, AR055:3, AR299:2, AR316:2, AR282:2, AR219:2, AR089:2, AR283:2, AR218:2, AR096:2, AR039:2, AR313:1, L0439:6, L0731:4, L0769:2, L0666:2, S0432:2, L0751:2, L0777:2, L0759:2, L0591:2, H0341:1, H0661:1, H0601:1, H0497:1, H0123:1, L0471:1, H0051:1, H0252:1, H0673:1, H0616:1, H0551:1, H0646:1, S0422:1, L0372:1, L0772:1, L0773:1, L0768:1, L0775:1, L0527:1, L0664:1, L0665:1, S0374:1, H0519:1, H0659:1, H0521:1, H0522:1, L0747:1, L0749:1, L0755:1, L0758:1, S0031:1, L0683:1, L0590:1 and L0595:1.
63	HFTDZ36	545726	73	AR282:5, AR176:3, AR252:2, AR270:2, AR287:2, AR309:2, AR221:2, AR263:2, AR291:2, AR224:2, AR233:2, AR181:2, AR198:2, AR240:2, AR222:2, AR193:2, AR214:2, AR286:2, AR165:2, AR164:1, AR178:1, AR236:1, AR201:1, AR168:1, AR089:1, AR262:1, AR060:1, AR217:1, AR161:1, AR272:1, AR264:1, AR061:1, AR195:1, AR257:1, AR268:1, AR215:1, AR285:1, AR258:1, AR210:1, AR104:1, AR196:1, L0779:5, L0758:4, S0036:2, H0038:2, S0422:2, L0662:2, L0803:2, H0171:1, H0208:1, H0411:1, S0222:1, H0013:1, H0108:1, H0381:1, H0123:1, H0024:1, H0373:1, S0051:1, S0628:1, H0615:1, L0794:1, L0804:1, S0126:1, S0436:1, S0028:1, L0736:1, L0777:1, L0731:1 and S0242:1.
64	HFXBL33	778070	74	AR163:25, AR161:24, AR162:24, AR313:23, AR173:17, AR180:17, AR196:17, AR166:16, AR229:16, AR164:16, AR270:14, AR247:14, AR182:14, AR238:14, AR234:14, AR175:14, AR179:13, AR269:13, AR181:13, AR178:13, AR199:12, AR258:12, AR262:12, AR240:11, AR233:11, AR257:11, AR183:11, AR264:11, AR300:10, AR268:10, AR285:10, AR293:10, AR274:10, AR231:10, AR275:10, AR191:10, AR230:10, AR228:10, AR236:10, AR237:10, AR226:10, AR239:9, AR287:9, AR203:9, AR294:9, AR174:9, AR296:9, AR260:8, AR176:8, AR189:8, AR200:8, AR312:8, AR033:8, AR096:8, AR185:8, AR299:8, AR255:7, AR297:7, AR267:7, AR188:7, AR177:7, AR290:7, AR277:6, AR218:6, AR190:6, AR286:6, AR291:6, AR089:6, AR266:6, AR060:6, AR227:6, AR219:6, AR263:5, AR295:5, AR316:5, AR311:5, AR261:5, AR055:5, AR235:5, AR309:5, AR282:5, AR272:4, AR288:4, AR308:4, AR256:4, AR053:4, AR289:4, AR104:4, AR283:4, AR215:4, AR223:4, AR232:4, AR212:4, AR213:3, AR061:3, AR211:3, AR217:3, AR216:3, AR169:3, AR210:3, AR195:3, AR168:2, AR225:2, AR201:2, AR193:2, AR171:2, AR214:2, AR039:2, AR243:2, AR222:2, AR170:1, AR246:1, AR224:1, H0657:3, H0645:2, L0748:2, H0542:2, H0583:1, H0650:1, S0001:1, L0586:1, H0013:1, L0021:1, T0071:1, H0354:1, H0179:1, T0006:1, H0591:1, H0272:1, L0667:1, H0547:1, H0521:1, S0404:1, S0031:1 and L0599:1.
65	HFXJX44	701988	75	AR313:13, AR162:11, AR161:10, AR178:10, AR163:10, AR176:10, AR183:10, AR165:9, AR089:9, AR181:9, AR182:9, AR164:9, AR229:9, AR166:8, AR269:8, AR173:8, AR196:8, AR055:8, AR300:8, AR228:8, AR175:7, AR233:7, AR226:7, AR309:7, AR247:7, AR192:7, AR239:7, AR180:7, AR236:7, AR257:7, AR293:7, AR266:7, AR235:7, AR240:7, AR238:7, AR267:7, AR096:7, AR177:7, AR261:6, AR053:6, AR179:6, AR245:6, AR268:6, AR282:6, AR299:6, AR198:6, AR290:6, AR204:6, AR191:6, AR060:6, AR262:6, AR174:6, AR277:6, AR312:6, AR271:6, AR185:5, AR316:5, AR289:5, AR270:5, AR294:5, AR193:5, AR201:5, AR258:5, AR296:5, AR212:5, AR237:5, AR255:5, AR227:5, AR234:5, AR061:5, AR274:5, AR275:5, AR264:5, AR197:5, AR287:5, AR243:5, AR297:5, AR286:4, AR263:4, AR199:4, AR200:4, AR231:4, AR203:4, AR291:4, AR214:4, AR242:4, AR285:4, AR230:4, AR033:4, AR189:4, AR213:4, AR184:4, AR195:4, AR288:4, AR246:4, AR295:4, AR224:4, AR252:3, AR104:3, AR250:3, AR272:3, AR218:3, AR219:3, AR190:3, AR308:3, AR222:3, AR171:3, AR260:3, AR207:3, AR168:3, AR205:3, AR283:3, AR232:3, AR039:3, AR311:2, AR172:2, AR256:2, AR221:2, AR225:2, AR217:2, AR169:1, AR210:1, AR211:1, AR254:1, H0590:2, S0282:1, H0486:1, H0421:1 and H0594:1.
66	HFXKT05	658690	76	AR207:65, AR197:54, AR193:47, AR192:45, AR201:42, AR033:40, AR299:40, AR055:39, AR242:38, AR235:38, AR177:38,

67	HGBH35	570262	77	<p>AR233:37, AR198:35, AR185:33, AR060:33, AR195:32, AR174:31, AR203:31, AR191:31, AR204:31, AR061:30, AR104:30, AR181:30, AR243:29, AR179:29, AR257:28, AR165:28, AR196:28, AR176:28, AR190:28, AR089:27, AR175:27, AR213:27, AR291:27, AR164:27, AR228:27, AR287:26, AR275:26, AR161:26, AR166:26, AR238:26, AR236:26, AR163:26, AR199:25, AR178:25, AR245:24, AR162:24, AR267:24, AR039:23, AR266:23, AR246:23, AR261:23, AR205:23, AR173:23, AR286:22, AR250:22, AR240:22, AR296:22, AR316:22, AR247:21, AR293:21, AR232:21, AR231:21, AR188:21, AR294:21, AR053:20, AR255:20, AR289:20, AR282:20, AR189:20, AR212:20, AR300:20, AR230:20, AR295:19, AR239:19, AR270:19, AR258:19, AR234:19, AR308:19, AR269:18, AR180:18, AR253:18, AR285:17, AR227:17, AR297:17, AR254:17, AR272:17, AR237:17, AR200:16, AR182:16, AR271:16, AR262:16, AR277:16, AR312:15, AR229:15, AR260:15, AR263:15, AR274:14, AR268:13, AR266:13, AR309:13, AR096:13, AR290:13, AR264:12, AR183:12, AR252:11, AR313:10, AR311:10, AR256:9, AR225:9, AR283:9, AR211:7, AR172:7, AR210:7, AR223:7, AR224:7, AR171:6, AR217:6, AR221:6, AR216:5, AR219:5, AR170:5, AR215:5, AR222:4, AR214:4, AR168:3, AR218:3, AR169:3, L2804:16, L2400:15, L0748:8, L3019:5, L3316:3, L2138:3, H0553:2, L3140:2, L3904:2, S0378:2, L0777:2, L0758:2, H0657:1, S0282:1, H0402:1, L0005:1, H0333:1, T0114:1, S0280:1, H0618:1, H0253:1, H0581:1, H0052:1, H0050:1, H0620:1, S0388:1, H0354:1, H0135:1, S0344:1, L0763:1, L0638:1, L0761:1, L0764:1, L0363:1, L0766:1, L0651:1, L0805:1, L0655:1, L0659:1, L0666:1, L2261:1, H0701:1, L0749:1, L0756:1, L0779:1, L0752:1, L0599:1, H0542:1, H0423:1, H0422:1 and H0506:1.</p> <p>AR089:24, AR226:21, AR299:20, AR164:20, AR165:20, AR060:19, AR166:17, AR185:16, AR201:16, AR163:15, AR161:15, AR162:15, AR232:15, AR096:14, AR188:14, AR237:14, AR039:14, AR227:14, AR233:13, AR238:13, AR275:12, AR193:12, AR191:12, AR055:12, AR173:11, AR246:11, AR183:11, AR240:11, AR228:11, AR196:11, AR316:11, AR313:11, AR189:10, AR239:10, AR061:10, AR175:10, AR258:10, AR199:10, AR176:10, AR180:10, AR197:9, AR190:9, AR174:9, AR283:9, AR270:9, AR266:9, AR245:9, AR203:9, AR231:9, AR195:9, AR300:8, AR257:8, AR269:8, AR169:8, AR178:8, AR242:8, AR182:8, AR277:8, AR234:8, AR192:8, AR236:8, AR235:8, AR297:8, AR291:8, AR198:8, AR181:8, AR282:8, AR295:8, AR264:8, AR218:8, AR274:7, AR294:7, AR217:7, AR177:7, AR285:7, AR247:7, AR271:7, AR263:7, AR288:7, AR104:7, AR219:7, AR229:7, AR261:7, AR215:7, AR216:6, AR287:6, AR286:6, AR255:6, AR179:6, AR268:6, AR243:6, AR262:6, AR205:6, AR289:6, AR293:6, AR223:6, AR267:5, AR200:5, AR312:5, AR254:5, AR290:5, AR260:5, AR308:5, AR311:5, AR309:5, AR204:5, AR230:5, AR296:4, AR213:4, AR225:4, AR170:4, AR272:4, AR252:4, AR256:4, AR214:4, AR222:3, AR207:3, AR053:3, AR211:3, AR172:3, AR210:3, AR033:2, AR212:2, AR224:2, AR171:2, AR168:2, L0748:9, L0766:6, L0665:6, L0751:6, H0550:5, S0358:4, L0774:4, L0758:4, L0581:4, H0135:3, L0662:3, L0775:3, L0776:3, L0743:3, L0747:3, L0749:3, L0777:3, L0600:3, H0295:2, H0722:2, H0052:2, H0014:2, H0510:2, L0640:2, L0659:2, L0526:2, L0809:2, H0696:2, L0753:2, S0134:1, S0212:1, S0376:1, S0408:1, H0742:1, H0730:1, H0747:1, H0549:1, H0331:1, H0486:1, H0575:1, S0049:1, H0085:1, H0204:1, H0057:1, S0051:1, H0266:1, H0188:1, H0687:1, H0169:1, H0090:1, H0591:1, T0067:1, H0488:1, H0714:1, S0438:1, L0374:1, L0648:1, L0376:1, L0807:1, L5622:1, L0790:1, L0791:1, L0666:1, H0701:1, H0547:1, S0126:1, H0660:1, H0672:1, H0539:1, H0436:1, L0439:1, L0746:1, L0750:1, L0779:1, L0752:1, L0759:1 and S0436:1.</p> <p>AR196:8, AR191:7, AR269:7, AR215:7, AR180:6, AR188:6, AR270:6, AR223:6, AR173:6, AR198:5, AR176:5, AR178:5, AR268:5, AR055:5, AR165:5, AR175:5, AR181:5, AR266:5, AR161:5, AR162:5, AR264:5, AR183:5, AR060:5, AR174:5, AR164:5, AR291:5, AR163:5, AR172:5, AR182:5, AR189:5, AR166:5, AR261:5, AR089:5, AR261:5, AR193:5, AR193:5, AR177:4, AR246:4, AR255:4, AR216:4, AR285:4, AR179:4, AR257:4, AR217:4, AR170:4, AR221:4, AR290:4, AR299:4,</p>
68	HGLAF75	566838	78	<p>AR196:8, AR191:7, AR269:7, AR215:7, AR180:6, AR188:6, AR270:6, AR223:6, AR173:6, AR198:5, AR176:5, AR178:5, AR268:5, AR055:5, AR165:5, AR175:5, AR181:5, AR266:5, AR161:5, AR162:5, AR264:5, AR183:5, AR060:5, AR174:5, AR164:5, AR291:5, AR163:5, AR172:5, AR182:5, AR189:5, AR166:5, AR261:5, AR089:5, AR261:5, AR193:5, AR193:5, AR177:4, AR246:4, AR255:4, AR216:4, AR285:4, AR179:4, AR257:4, AR217:4, AR170:4, AR221:4, AR290:4, AR299:4,</p>

				AR252:4, AR200:4, AR267:4, AR262:4, AR235:4, AR185:4, AR240:4, AR238:4, AR233:4, AR295:4, AR316:4, AR168:4, AR190:4, AR218:4, AR271:4, AR236:4, AR296:4, AR096:4, AR287:4, AR199:4, AR293:4, AR272:4, AR242:4, AR297:4, AR243:4, AR294:4, AR195:4, AR300:4, AR169:3, AR224:3, AR253:3, AR282:3, AR203:3, AR333:3, AR288:3, AR309:3, AR171:3, AR222:3, AR211:3, AR312:3, AR275:3, AR232:3, AR192:3, AR247:3, AR260:3, AR228:3, AR104:3, AR283:3, AR229:3, AR210:3, AR225:3, AR039:3, AR258:3, AR205:3, AR234:3, AR286:3, AR289:3, AR308:3, AR230:3, AR263:3, AR219:3, AR237:3, AR214:3, AR277:2, AR204:2, AR227:2, AR274:2, AR256:2, AR226:2, AR061:2, AR245:2, AR212:2, AR213:2, AR311:1, H0351:10, L0439:4, L0766:3, L3255:2, L2562:2, L0775:2, L0666:2, L0779:2, L0780:2, L0755:2, L0731:2, H0772:1, L3388:1, H0333:1, H0486:1, H0015:1, H0687:1, S0422:1, L0761:1, L0776:1, L0659:1, L0663:1, H0682:1, S0152:1, L0745:1, L0752:1 and S0026:1.
69	HHENV10	562772	79	AR242:3, AR235:3, AR183:3, AR309:3, AR282:3, AR243:2, AR171:2, AR283:1, AR055:1, AR257:1, AR168:1, AR213:1, AR164:1, AR230:1, AR264:1, AR287:1, H0543:2, H0497:1 and H0625:1.
70	HHGCG53	340818	80	AR192:3, AR169:3, AR264:3, AR162:3, AR309:3, AR245:3, AR250:3, AR161:3, AR163:3, AR171:3, AR193:2, AR266:2, AR176:2, AR289:2, AR283:2, AR267:2, AR197:2, AR274:2, AR242:2, AR239:2, AR295:2, AR238:2, AR225:2, AR182:2, AR263:2, AR261:2, AR183:2, AR172:1, AR269:1, AR168:1, AR231:1, AR216:1, AR237:1, AR164:1, AR228:1, AR096:1, AR215:1, AR233:1, AR252:1, AR166:1, AR232:1, AR060:1, AR277:1, AR089:1, AR290:1, AR299:1, AR240:1, AR229:1, AR282:1, AR296:1, H0333:1.
71	HHGCM76	662329	81	AR245:8, AR175:7, AR183:6, AR176:6, AR196:6, AR191:6, AR174:6, AR060:5, AR254:5, AR263:5, AR039:5, AR173:5, AR177:5, AR309:5, AR261:5, AR232:4, AR161:4, AR162:4, AR096:4, AR163:4, AR182:4, AR264:4, AR089:4, AR165:4, AR198:4, AR270:4, AR275:4, AR268:4, AR178:4, AR189:4, AR164:4, AR166:3, AR286:3, AR242:3, AR193:3, AR243:3, AR216:3, AR171:3, AR283:3, AR266:3, AR215:3, AR272:3, AR211:3, AR188:3, AR313:3, AR180:3, AR207:3, AR269:3, AR200:3, AR247:3, AR316:3, AR289:3, AR290:3, AR229:3, AR294:3, AR297:3, AR195:3, AR267:3, AR061:3, AR240:3, AR295:3, AR197:3, AR238:3, AR257:3, AR190:3, AR055:3, AR228:2, AR181:2, AR053:2, AR033:2, AR288:2, AR226:2, AR282:2, AR201:2, AR239:2, AR287:2, AR231:2, AR262:2, AR223:2, AR104:2, AR285:2, AR308:2, AR218:2, AR179:2, AR293:2, AR221:2, AR311:2, AR271:2, AR225:2, AR246:2, AR185:2, AR237:2, AR299:2, AR312:2, AR274:2, AR233:2, AR199:2, AR227:2, AR219:2, AR300:2, AR213:2, AR256:2, AR296:2, AR234:2, AR291:2, AR172:2, AR205:2, AR252:2, AR230:1, AR203:1, AR255:1, AR214:1, AR258:1, AR224:1, AR260:1, AR277:1, AR210:1, L0803:6, H0052:4, H0036:3, L0665:3, H0574:2, H0559:2, L0763:2, L0809:2, L0791:2, L0666:2, L0663:2, L0748:2, L0745:2, L0747:2, H0624:1, H0265:1, H0657:1, H0381:1, S0045:1, H0550:1, H0614:1, H0587:1, H0333:1, T0040:1, L0022:1, H0575:1, H0564:1, H0068:1, H0509:1, L0769:1, L0637:1, L0643:1, L0764:1, L0662:1, L0804:1, L0806:1, L0527:1, L0783:1, L0382:1, L0664:1, H0144:1, H0690:1, H0682:1, H0670:1, H0694:1, H0626:1, L0743:1, L0777:1, L0780:1, L0755:1, H0343:1 and S0011:1.
	HHGCM76	383547	230	
72	HHPEN62	695134	82	AR196:528, AR310:360, AR218:326, AR052:317, AR219:315, AR194:272, AR211:264, AR206:250, AR202:237, AR205:232, AR265:232, AR244:224, AR053:218, AR184:208, AR246:207, AR241:203, AR284:198, AR309:192, AR186:185, AR263:184, AR273:173, AR280:170, AR243:168, AR247:157, AR315:155, AR312:152, AR311:150, AR314:145, AR281:140, AR039:139, AR182:139, AR275:137, AR271:130, AR313:130, AR185:128, AR177:121, AR213:121, AR204:120, AR104:118, AR300:116, AR274:115, AR210:115, AR245:112, AR229:112,

73	HJABB94	456466	83	AR240:112, AR299:112, AR055:112, AR308:112, AR061:112, AR207:109, AR096:108, AR290:107, AR237:107, AR316:106, AR248:104, AR264:100, AR193:99, AR198:99, AR292:99, AR268:96, AR033:95, AR249:94, AR231:94, AR197:94, AR188:94, AR259:93, AR233:92, AR222:92, AR179:90, AR251:88, AR192:88, AR227:87, AR267:86, AR269:84, AR232:84, AR195:82, AR060:81, AR200:80, AR270:80, AR223:80, AR272:79, AR089:77, AR172:76, AR175:76, AR253:74, AR250:74, AR234:74, AR282:72, AR212:70, AR242:69, AR201:67, AR199:66, AR176:66, AR180:64, AR294:64, AR178:64, AR189:62, AR181:60, AR289:59, AR283:59, AR291:58, AR169:57, AR285:56, AR171:55, AR226:55, AR236:54, AR183:53, AR256:52, AR266:50, AR174:50, AR295:49, AR293:49, AR191:47, AR173:47, AR286:47, AR190:47, AR254:46, AR221:46, AR225:46, AR238:45, AR170:43, AR258:42, AR163:41, AR224:39, AR235:39, AR277:39, AR168:38, AR296:37, AR203:37, AR166:34, AR161:34, AR262:34, AR164:32, AR162:32, AR165:31, AR255:30, AR288:28, AR261:25, AR260:20, AR217:20, AR230:17, AR297:15, AR252:15, AR287:15, AR214:14, AR228:13, AR239:12, AR216:12, AR215:11, AR257:11, L0766:7, L0731:7, H0457:6, H0051:6, L0754:6, L0803:4, L0666:4, H0140:3, S0474:3, H0052:3, L0157:3, L0662:3, L0659:3, L5622:3, L0758:3, H0657:2, S0140:2, S0010:2, H0628:2, S0036:2, H0100:2, S0112:2, L0532:2, L0438:2, H0547:2, L0743:2, S0242:2, H0542:2, H0422:2, H0265:1, H0656:1, S0282:1, S0444:1, S0360:1, S0408:1, H0735:1, H0749:1, L0463:1, H0351:1, H0261:1, H0438:1, H0586:1, H0635:1, H0599:1, H0318:1, H0581:1, H0251:1, H0327:1, H0545:1, H0046:1, L0471:1, S0051:1, H0375:1, H0622:1, T0006:1, H0553:1, H0598:1, H0163:1, H0040:1, H0551:1, L0564:1, H0334:1, H0561:1, S0440:1, H0529:1, L0800:1, L0794:1, L0651:1, L0805:1, L0655:1, L0606:1, L0527:1, L0635:1, L0382:1, L0809:1, L0792:1, L0663:1, S0216:1, H0144:1, H0520:1, H0519:1, S0328:1, S0380:1, S0404:1, H0436:1, S0392:1, S0028:1, L0745:1, L0779:1, L0777:1, L0752:1, S0260:1, L0480:1, S0026:1, H0665:1, S0192:1, S0194:1, H0423:1, S0424:1 and H0506:1.
74	HJACG30	895505	84	AR176:9, AR225:9, AR221:8, AR295:8, AR170:8, AR264:8, AR178:8, AR288:7, AR291:7, AR180:7, AR215:7, AR175:7, AR275:7, AR297:7, AR224:7, AR268:7, AR293:7, AR228:7, AR269:6, AR309:6, AR270:6, AR263:6, AR285:6, AR296:6, AR267:6, AR282:6, AR162:6, AR239:6, AR173:6, AR311:6, AR161:5, AR231:5, AR266:5, AR181:5, AR207:5, AR182:5, AR163:5, AR183:5, AR053:5, AR238:5, AR289:5, AR217:5, AR213:5, AR229:5, AR274:5, AR286:5, AR177:5, AR290:5, AR237:5, AR287:5, AR033:5, AR226:5, AR294:5, AR277:5, AR196:5, AR212:4, AR179:4, AR235:4, AR216:4, AR055:4, AR223:4, AR233:4, AR260:4, AR316:4, AR211:4, AR283:4, AR171:4, AR312:4, AR192:4, AR256:4, AR227:4, AR261:4, AR190:4, AR230:4, AR104:4, AR300:4, AR240:4, AR060:4, AR174:4, AR169:3, AR198:3, AR222:3, AR218:3, AR191:3, AR199:3, AR210:3, AR189:3, AR271:3, AR195:3, AR313:3, AR219:3, AR039:3, AR232:3, AR188:3, AR096:3, AR089:3, AR185:3, AR200:3, AR172:3, AR166:3, AR234:3, AR168:3, AR165:3, AR164:3, AR258:3, AR257:3, AR299:3, AR308:2, AR201:2, AR243:2, AR193:2, AR203:2, AR061:2, AR247:2, AR255:2, AR262:2, AR272:2, AR236:2, AR242:1, AR254:1, H0624:1, S0360:1, H0586:1, L0021:1, T0041:1 and L0779:1.
74	HJACG30	895505	84	AR263:8, AR165:8, AR250:8, AR162:7, AR161:7, AR205:7, AR196:7, AR166:7, AR164:7, AR215:7, AR163:7, AR192:7, AR198:7, AR235:7, AR245:6, AR264:6, AR216:6, AR270:6, AR207:6, AR309:6, AR246:6, AR174:5, AR223:5, AR269:5, AR168:5, AR243:5, AR224:5, AR180:5, AR311:5, AR183:5, AR308:5, AR254:5, AR173:5, AR177:5, AR268:5, AR242:5, AR179:5, AR312:5, AR176:5, AR175:5, AR291:5, AR215:5, AR181:5, AR285:4, AR170:4, AR275:4, AR295:4, AR053:4, AR271:4, AR191:4, AR288:4, AR204:4, AR316:4, AR274:4, AR199:4, AR055:4, AR266:4, AR210:4, AR236:4, AR217:4, AR240:4, AR188:4, AR189:4, AR257:4, AR213:4, AR178:4, AR039:4, AR222:4, AR225:4, AR182:4, AR297:4, AR201:4, AR212:4, AR252:4, AR296:4, AR261:4, AR286:3, AR253:3, AR060:3, AR294:3, AR237:3, AR282:3, AR267:3,

				AR262:3, AR290:3, AR172:3, AR171:3, AR287:3, AR299:3, AR231:3, AR289:3, AR197:3, AR193:3, AR293:3, AR255:3, AR190:3, AR200:3, AR228:3, AR033:3, AR313:3, AR211:3, AR258:3, AR300:3, AR089:3, AR238:3, AR185:3, AR233:3, AR229:3, AR277:3, AR226:3, AR239:3, AR230:3, AR234:2, AR214:2, AR260:2, AR096:2, AR061:2, AR195:2, AR219:2, AR203:2, AR256:2, AR272:2, AR232:2, AR227:2, AR218:1, AR283:1, AR104:1, AR169:1, H0069:3, T0041:2, H0436:2, H0318:1, L4747:1, L0646:1, L0766:1 and L0803:1.
	HJACG30	821341	231	
	HJACG30	774300	232	
75	HJBCY35	719729	85	AR215:11, AR291:11, AR225:10, AR217:9, AR216:8, AR296:8, AR214:8, AR297:8, AR266:7, AR183:7, AR257:7, AR223:7, AR170:7, AR269:7, AR287:7, AR221:6, AR270:6, AR171:6, AR182:6, AR286:6, AR169:6, AR172:6, AR294:6, AR176:6, AR235:6, AR163:5, AR295:5, AR161:5, AR168:5, AR255:5, AR162:5, AR224:5, AR285:5, AR293:5, AR268:5, AR289:5, AR288:5, AR263:5, AR264:5, AR165:4, AR173:4, AR260:4, AR262:4, AR175:4, AR164:4, AR179:4, AR055:4, AR104:4, AR222:4, AR166:4, AR060:4, AR181:4, AR242:4, AR313:4, AR283:4, AR258:4, AR240:4, AR311:4, AR290:3, AR180:3, AR282:3, AR247:3, AR231:3, AR316:3, AR267:3, AR233:3, AR228:3, AR300:3, AR236:3, AR177:3, AR096:3, AR212:3, AR256:3, AR275:3, AR237:3, AR185:3, AR239:3, AR245:3, AR229:3, AR039:3, AR238:3, AR234:3, AR191:3, AR190:2, AR199:2, AR089:2, AR178:2, AR277:2, AR189:2, AR174:2, AR205:2, AR309:2, AR061:2, AR274:2, AR227:2, AR261:2, AR188:2, AR218:2, AR272:2, AR219:2, AR312:2, AR196:2, AR195:2, AR232:2, AR200:2, AR211:2, AR230:2, AR203:1, AR210:1, AR226:1, AR033:1, AR252:1, H0618:16, H0617:13, H0253:11, H0457:6, L0766:6, L0769:5, H0255:4, H0559:4, H0181:4, L0748:4, H0170:3, S0051:3, H0622:3, L0770:3, L0653:3, L0743:3, L0779:3, H0341:2, H0484:2, S0049:2, H0620:2, H0424:2, H0135:2, H0040:2, H0059:2, H0100:2, T0042:2, S0002:2, L0758:2, L0588:2, H0171:1, S0134:1, H0650:1, H0657:1, H0656:1, S0116:1, L0534:1, H0637:1, S0266:1, S0300:1, L0717:1, H0549:1, H0550:1, S6014:1, H0333:1, L2504:1, L2522:1, H0427:1, L0021:1, H0599:1, H0545:1, H0150:1, L0157:1, S0050:1, H0355:1, H0252:1, L0483:1, H0068:1, S0036:1, H0038:1, H0087:1, H0272:1, H0623:1, T0041:1, L4747:1, L3904:1, L3905:1, L0761:1, L0645:1, L0648:1, L0662:1, L0768:1, L0774:1, L0776:1, L0658:1, L4669:1, L0659:1, L0382:1, L0665:1, L2257:1, L2260:1, H0547:1, H0711:1, H0670:1, H0672:1, S0350:1, H0696:1, H0704:1, L0744:1, L0439:1, L0749:1, L0777:1, L0780:1, L0731:1, L0757:1, S0436:1, S0276:1 and H0543:1.
76	HJPAD75	651337	86	AR277:7, AR215:2, AR282:2, AR246:2, AR225:2, AR290:2, AR213:2, AR172:2, AR261:1, AR266:1, AR162:1, AR165:1, AR257:1, AR230:1, AR168:1, AR182:1, AR166:1, AR252:1, AR196:1, AR295:1, AR270:1, AR177:1, AR285:1, AR195:1, AR291:1, AR217:1, AR161:1, AR256:1, H0556:6, L0769:4, L0771:4, H0265:3, L0764:3, H0083:2, S0142:2, L0794:2, L0803:2, L0789:2, L0792:2, L0438:2, L0754:2, L0749:2, L0757:2, S0356:1, S0444:1, S0360:1, H0013:1, S0010:1, H0421:1, H0263:1, H0596:1, L0157:1, L0471:1, H0553:1, H0628:1, H0090:1, H0561:1, S0372:1, L2270:1, S0422:1, L0667:1, L0768:1, L0776:1, L0809:1, H0658:1, H0648:1, S0330:1, H0521:1, H0134:1, S0027:1, L0748:1, L0756:1, L0755:1, L0731:1, S0434:1, L0592:1 and H0542:1.
77	HKABZ65	862030	87	AR313:41, AR242:32, AR039:28, AR165:25, AR163:25, AR164:24, AR161:24, AR162:24, AR166:24, AR089:24, AR096:23, AR173:22, AR196:20, AR193:20, AR299:20, AR300:20, AR238:20, AR180:19, AR175:19, AR178:18, AR240:18, AR229:18, AR234:18, AR185:17, AR247:17, AR218:17, AR262:17, AR179:16, AR285:16, AR183:16, AR269:16, AR293:15, AR174:15, AR199:15, AR182:15, AR181:15, AR238:14, AR191:14, AR296:14, AR236:14, AR257:14, AR316:14, AR270:14, AR226:13,

				AR219:13, AR297:13, AR277:13, AR264:12, AR200:12, AR312:12, AR195:12, AR213:12, AR192:12, AR203:12, AR268:12, AR212:12, AR294:12, AR286:11, AR060:11, AR230:11, AR177:11, AR189:11, AR233:11, AR260:10, AR231:10, AR198:10, AR290:10, AR188:10, AR204:10, AR053:9, AR287:9, AR288:9, AR255:9, AR033:9, AR261:9, AR282:9, AR104:9, AR245:9, AR243:9, AR235:9, AR228:8, AR308:8, AR275:8, AR291:8, AR201:8, AR274:7, AR237:7, AR197:7, AR239:7, AR224:7, AR311:7, AR176:7, AR267:7, AR172:7, AR256:7, AR223:7, AR205:7, AR171:6, AR227:6, AR168:6, AR214:6, AR207:6, AR169:6, AR225:6, AR252:6, AR250:6, AR271:6, AR215:6, AR170:6, AR211:6, AR221:6, AR309:5, AR283:5, AR266:5, AR254:5, AR222:5, AR190:5, AR210:5, AR216:5, AR217:5, AR232:5, AR055:5, AR289:4, AR253:4, AR246:4, AR272:3, AR061:2 H0494:1
	HKABZ65	665424	233	
78	HKACB56	554616	88	AR223:8, AR235:8, AR263:7, AR222:7, AR170:7, AR221:7, AR207:7, AR216:7, AR169:7, AR224:7, AR168:7, AR171:7, AR311:7, AR198:7, AR309:7, AR214:6, AR225:6, AR053:6, AR197:6, AR212:6, AR215:6, AR089:6, AR264:6, AR245:6, AR205:5, AR217:5, AR165:5, AR163:5, AR161:5, AR162:5, AR164:5, AR166:5, AR275:5, AR308:5, AR213:5, AR172:5, AR312:4, AR277:4, AR274:4, AR246:4, AR196:4, AR060:4, AR271:4, AR282:4, AR195:4, AR295:4, AR261:4, AR269:4, AR230:4, AR316:4, AR181:4, AR288:4, AR176:4, AR055:3, AR240:3, AR204:3, AR297:3, AR283:3, AR313:3, AR177:3, AR210:3, AR285:3, AR242:3, AR296:3, AR039:3, AR199:3, AR096:3, AR173:3, AR272:3, AR236:3, AR200:3, AR252:3, AR254:3, AR238:3, AR175:3, AR291:3, AR193:3, AR299:3, AR247:3, AR191:3, AR033:3, AR188:3, AR286:3, AR289:3, AR300:3, AR185:3, AR201:3, AR174:3, AR270:3, AR262:3, AR237:2, AR293:2, AR104:2, AR232:2, AR287:2, AR294:2, AR178:2, AR189:2, AR229:2, AR234:2, AR226:2, AR239:2, AR061:2, AR182:2, AR290:2, AR203:2, AR237:2, AR255:2, AR183:2, AR190:2, AR233:2, AR211:2, AR231:2, AR257:2, AR267:2, AR243:2, AR258:2, AR256:2, AR179:1, AR218:1, AR268:1, AR219:1, AR192:1, AR180:1, AR253:1 H0494:4, L0045:1 and L0806:1
79	HKACD58	1352202	89	AR261:30, AR235:29, AR283:29, AR297:20, AR291:17, AR285:16, AR286:15, AR295:13, AR183:13, AR269:13, AR287:12, AR258:11, AR268:11, AR266:11, AR289:10, AR161:10, AR162:10, AR288:10, AR236:10, AR260:10, AR165:10, AR163:10, AR166:9, AR207:9, AR164:9, AR270:9, AR282:9, AR277:8, AR223:8, AR214:8, AR243:8, AR215:8, AR224:8, AR296:8, AR096:8, AR039:8, AR172:8, AR221:8, AR192:8, AR316:8, AR182:8, AR104:8, AR089:8, AR222:8, AR293:7, AR173:7, AR176:7, AR255:7, AR169:7, AR171:7, AR311:7, AR257:7, AR313:7, AR225:7, AR245:7, AR254:7, AR180:7, AR211:7, AR262:7, AR195:7, AR290:6, AR240:6, AR175:6, AR179:6, AR217:6, AR247:6, AR256:6, AR055:6, AR309:6, AR168:6, AR300:6, AR294:6, AR197:6, AR219:6, AR263:6, AR299:6, AR242:6, AR216:6, AR060:5, AR238:5, AR267:5, AR185:5, AR250:5, AR264:5, AR181:5, AR234:5, AR053:5, AR199:5, AR275:5, AR178:5, AR308:5, AR033:5, AR274:5, AR193:5, AR177:5, AR218:5, AR174:4, AR213:4, AR170:4, AR246:4, AR212:4, AR312:4, AR198:4, AR253:4, AR205:4, AR271:4, AR189:4, AR191:4, AR210:4, AR201:4, AR239:3, AR237:3, AR252:3, AR196:3, AR190:3, AR233:3, AR231:3, AR227:3, AR061:3, AR226:3, AR230:3, AR272:3, AR229:3, AR204:3, AR232:3, AR203:3, AR200:3, AR188:2, AR228:2, S0360:12, S0436:3, S0194:3, S0114:2, H0483:2, S0408:2, L3504:2, H0575:2, H0581:2, S0344:2, L2262:2, H0519:2, L0754:2, H0139:1, L2884:1, H0657:1, H0656:1, S0420:1, S0356:1, S0410:1, L2333:1, H0151:1, S0046:1, L3127:1, H0549:1, H0613:1, H0427:1, H0546:1, H0081:1, H0355:1, S0312:1, H0383:1, H0551:1, H0264:1, T0042:1, H0494:1, H0386:1, H0509:1, H0649:1, S0210:1, L0646:1, L0804:1, L0805:1, L5622:1, L2651:1, L2265:1, L2702:1, H0682:1, H0435:1, H0670:1, H0672:1, H0521:1, H0696:1, H0134:1, S0206:1, L0741:1, L0743:1, L0744:1, L0756:1, L0596:1, L0581:1, L0593:1, L0595:1,

	HKACD58	552465		L0366:1, S0242:1, S0196:1, H0423:1 and H0506:1.
80	HKAUV06	1352263	234	AR272:35, AR165:34, AR163:33, AR164:33, AR161:32, AR162:32, AR245:32, AR166:32, AR274:28, AR212:28, AR205:26, AR311:23, AR242:22, AR264:21, AR308:20, AR214:20, AR174:19, AR197:19, AR216:16, AR223:15, AR222:15, AR313:15, AR213:14, AR171:14, AR312:14, AR195:14, AR225:14, AR247:13, AR201:13, AR254:12, AR309:12, AR053:12, AR275:12, AR263:12, AR168:12, AR246:11, AR217:11, AR224:11, AR252:11, AR089:11, AR170:10, AR243:10, AR172:10, AR192:10, AR221:9, AR241:9, AR189:9, AR185:9, AR250:9, AR240:8, AR039:8, AR199:8, AR204:8, AR179:7, AR198:7, AR169:7, AR096:7, AR193:7, AR177:7, AR188:7, AR297:6, AR253:6, AR236:6, AR249:6, AR300:6, AR262:6, AR271:6, AR277:6, AR183:6, AR104:6, AR261:6, AR299:6, AR234:5, AR239:5, AR194:5, AR173:5, AR181:5, AR265:5, AR257:5, AR316:5, AR288:5, AR207:5, AR190:5, AR060:5, AR282:5, AR180:5, AR233:5, AR230:4, AR231:4, AR293:4, AR176:4, AR178:4, AR290:4, AR287:4, AR191:4, AR196:4, AR291:4, AR238:4, AR255:4, AR296:4, AR235:4, AR273:4, AR289:3, AR270:3, AR266:3, AR052:3, AR203:3, AR229:3, AR200:3, AR228:3, AR294:3, AR283:3, AR295:3, AR033:3, AR175:2, AR269:2, AR268:2, AR248:2, AR210:2, AR237:2, AR182:2, AR285:2, AR258:2, AR286:2, AR186:2, AR267:2, AR061:2, AR232:2, AR226:2, AR244:2, AR219:1, AR055:1, AR227:1, AR211:1, AR310:1, AR281:1, AR218:1, AR256:1 L0438:2, L0758:2, S0442:1, S0354:1, S0444:1, H0741:1, L0021:1, T0082:1, H0046:1, H0494:1, S0440:1, L3815:1, L0800:1, L0662:1, L5574:1, L0803:1, L0776:1, L0659:1, L2655:1, S0374:1, H0547:1, H0672:1, S0330:1, H0521:1, H0696:1, L0439:1, L0752:1, L0594:1 and H0543:1.
81	HKAFT66	638238	235	AR214:32, AR195:28, AR222:28, AR169:27, AR223:26, AR224:25, AR168:23, AR172:23, AR235:22, AR217:21, AR311:20, AR216:20, AR207:19, AR221:19, AR171:18, AR263:18, AR225:17, AR264:16, AR215:15, AR281:15, AR196:14, AR170:14, AR212:14, AR261:13, AR252:13, AR163:13, AR288:12, AR265:12, AR161:12, AR162:12, AR242:12, AR309:12, AR211:11, AR165:11, AR166:11, AR236:11, AR164:11, AR199:11, AR308:11, AR315:11, AR210:10, AR254:10, AR193:10, AR213:10, AR174:10, AR245:9, AR191:9, AR297:9, AR053:9, AR188:9, AR197:9, AR181:9, AR280:8, AR173:8, AR200:8, AR180:8, AR240:8, AR310:8, AR189:8, AR287:8, AR239:8, AR272:7, AR251:7, AR295:7, AR262:7, AR177:7, AR314:7, AR312:7, AR190:7, AR230:7, AR033:7, AR271:7, AR282:6, AR229:6, AR283:6, AR257:6, AR192:6, AR198:6, AR275:6, AR205:6, AR201:6, AR203:6, AR313:6, AR249:6, AR274:6, AR300:6, AR260:6, AR089:5, AR277:5, AR238:5, AR176:5, AR299:5, AR246:5, AR285:5, AR178:5, AR218:5, AR316:5, AR286:5, AR258:5, AR247:4, AR291:4, AR255:4, AR248:4, AR060:4, AR052:4, AR231:4, AR270:4, AR226:4, AR289:4, AR228:4, AR253:4, AR096:4, AR175:4, AR185:4, AR234:4, AR269:4, AR055:4, AR227:4, AR183:3, AR232:3, AR039:3, AR219:3, AR296:3, AR179:3, AR237:3, AR256:3, AR104:3, AR290:3, AR233:3, AR204:3, AR293:3, AR250:3, AR268:3, AR243:2, AR266:2, AR061:2, AR294:2, AR182:2, AR202:2, AR273:1, AR186:1 S0474:5, S0422:3, H0580:2, S0444:1, H0494:1 and H0543:1.
	HKAFT66	889258	236	
	HKAFT66	904790	237	
82	HKB1E57	876571	92	AR253:4, AR225:3, AR171:3, AR205:3, AR192:3, AR169:3, AR245:2, AR282:2, AR193:2, AR274:2, AR039:2, AR291:2, AR212:2, AR163:2, AR162:2, AR266:2, AR161:2, AR269:2, AR264:1, AR271:1, AR178:1, AR316:1, AR275:1, AR261:1,

				AR168:1, AR270:1, AR183:1, AR297:1, AR283:1, L0747:4, L0766:3, L0776:3, L0665:3, H0328:2, L0763:2, L0769:2, L0772:2, L0764:2, L0666:2, L0745:2, L0750:2, L0777:2, L0759:2, L0608:2, H0556:1, S0116:1, H0384:1, S0360:1, S0408:1, H0637:1, H0722:1, H0735:1, H0619:1, H0492:1, H0156:1, H0421:1, H0620:1, S0051:1, H0083:1, H0510:1, H0266:1, H0031:1, H0634:1, H0560:1, S0440:1, H0132:1, H0695:1, L0800:1, L0521:1, L0662:1, L0774:1, L0806:1, L0807:1, H0144:1, H0690:1, H0658:1, H0521:1, H0522:1, L0439:1, L0746:1, L0752:1, L0480:1, L0589:1, L0592:1, H0543:1 and H0422:1.
	HKB1E57	654871	238	
83	HKFBC53	1352286	93	AR249:155, AR248:131, AR251:111, AR265:54, AR253:42, AR096:23, AR263:23, AR244:18, AR290:13, AR268:13, AR246:12, AR184:11, AR177:11, AR194:9, AR267:8, AR229:8, AR270:8, AR247:7, AR240:7, AR269:7, AR183:6, AR202:5, AR175:5, AR234:5, AR241:5, AR316:5, AR206:5, AR313:5, AR055:4, AR299:4, AR033:4, AR238:3, AR292:3, AR061:3, AR182:3, AR171:3, AR273:3, AR224:3, AR274:3, AR198:3, AR275:3, AR216:3, AR266:3, AR195:3, AR284:3, AR168:3, AR237:2, AR215:2, AR282:2, AR285:2, AR242:2, AR310:2, AR250:2, AR300:2, AR298:2, AR186:2, AR039:2, AR231:2, AR291:2, AR223:2, AR243:2, AR289:2, AR179:2, AR204:2, AR104:2, AR205:2, AR257:2, AR271:2, AR053:2, AR226:2, AR277:2, AR217:2, AR232:2, AR192:2, AR296:2, AR185:2, AR264:1, AR295:1, AR089:1, AR261:1, AR213:1, AR259:1, AR166:1, AR286:1, AR308:1, AR233:1, AR201:1, L0794:11, H0521:11, S0002:8, L0805:8, L0803:7, S0278:6, S0144:6, L0774:4, L0777:4, S0380:3, H0265:2, H0556:2, H0638:2, L0761:2, L0776:2, L0809:2, S0406:2, S0298:1, S0420:1, S0356:1, H0431:1, H0618:1, H0546:1, H0100:1, H0429:1, H0494:1, H0509:1, S0142:1, S0426:1, L0640:1, L0763:1, L0770:1, L3904:1, L0800:1, L0804:1, L0806:1, L0807:1, L4669:1, L5622:1, L5623:1, L0791:1, L0792:1, L0666:1, L2261:1, S0374:1, H0690:1, H0522:1, S0390:1, L0740:1, L0751:1, L0756:1, L0779:1 and L0731:1.
	HKFBC53	701893	239	
	HKFBC53	513190	240	
	HKFBC53	383426	241	
84	HKGDL36	877489	94	AR274:28, AR214:24, AR168:23, AR216:22, AR205:21, AR245:20, AR224:20, AR272:18, AR222:17, AR199:17, AR171:17, AR223:17, AR252:17, AR215:16, AR213:16, AR312:16, AR195:15, AR217:15, AR170:15, AR247:15, AR166:14, AR313:14, AR212:14, AR246:14, AR225:14, AR165:13, AR164:13, AR172:13, AR311:13, AR308:13, AR169:12, AR162:12, AR161:12, AR053:12, AR221:12, AR163:12, AR210:11, AR179:11, AR188:11, AR197:10, AR275:10, AR263:10, AR250:10, AR189:9, AR174:9, AR264:9, AR242:9, AR236:9, AR089:9, AR201:9, AR254:9, AR096:9, AR193:8, AR299:8, AR271:8, AR243:8, AR175:8, AR309:8, AR253:8, AR039:8, AR291:8, AR180:8, AR296:8, AR190:7, AR185:7, AR288:7, AR173:7, AR240:7, AR178:7, AR295:7, AR293:7, AR218:7, AR267:7, AR183:6, AR211:6, AR289:6, AR282:6, AR262:6, AR191:6, AR300:6, AR219:6, AR277:6, AR316:6, AR192:6, AR290:6, AR270:6, AR177:6, AR261:6, AR269:6, AR268:6, AR255:6, AR060:6, AR204:6, AR297:6, AR231:5, AR203:5, AR200:5, AR230:5, AR257:5, AR285:5, AR198:5, AR237:5, AR294:5, AR256:5, AR283:5, AR181:5, AR287:4, AR239:4, AR260:4, AR229:4, AR258:4, AR104:4, AR234:4, AR233:4, AR061:4, AR207:4, AR182:4, AR176:4, AR286:4, AR232:4, AR238:3, AR033:3, AR226:3, AR196:3, AR055:3, AR227:3, AR235:2, AR228:2, H0424:28, L0803:25, L0805:9, L0636:7, L0774:5, L0770:4, H0661:2, S0222:2, L0157:2, L0638:2, L3904:2, L0776:2, L0659:2, L0809:2, L0789:2, H0539:2, H0292:2, H0295:1, S0114:1, H0663:1, S0626:1, H0549:1, H0748:1, H0571:1, S0051:1, T0006:1, H0033:1, H0604:1, H0213:1, H0418:1, H0417:1, H0538:1, L0769:1, L3905:1, L0794:1, L0647:1, L0787:1,

				H0684:1, H0672:1, L0749:1, L0753:1, L0759:1, S0260:1, S0434:1 and S0436:1.
	HKGDL36	704088	242	
85	HKISB57	625956	95	AR161:12, AR162:12, AR163:12, AR165:12, AR166:11, AR089:8, AR225:7, AR178:6, AR183:6, AR172:6, AR300:5, AR224:5, AR181:5, AR223:5, AR170:5, AR299:5, AR039:4, AR298:4, AR096:4, AR268:4, AR275:4, AR286:4, AR274:4, AR055:4, AR247:4, AR222:4, AR269:4, AR258:4, AR257:4, AR179:3, AR240:3, AR242:3, AR173:3, AR182:3, AR262:3, AR270:3, AR272:3, AR189:3, AR316:3, AR267:3, AR175:3, AR245:3, AR313:3, AR287:3, AR296:3, AR231:2, AR210:2, AR171:2, AR190:2, AR217:2, AR205:2, AR277:2, AR230:2, AR295:2, AR290:2, AR263:2, AR060:2, AR309:2, AR191:2, AR228:2, AR229:2, AR104:2, AR261:2, AR288:2, AR174:2, AR282:2, AR246:2, AR255:2, AR312:2, AR237:2, AR169:2, AR193:2, AR271:2, AR201:2, AR233:2, AR239:2, AR197:1, AR061:1, AR226:1, AR177:1, AR213:1, AR195:1, AR033:1, AR188:1, AR238:1, AR196:1, AR185:1, AR293:1, AR176:1, AR234:1, AR227:1, L0747:5, L0731:5, H0031:4, L0599:4, S0045:3, H0411:3, H0494:3, L0783:3, L0743:3, L0758:3, L0759:3, L0604:3, H0295:2, S0356:2, S0360:2, S0046:2, H0413:2, L0774:2, H0651:2, S0027:2, L0748:2, L0439:2, L0752:2, L0601:2, H0484:1, S0132:1, H0586:1, H0333:1, H0486:1, H0042:1, H0122:1, H0546:1, H0041:1, H0050:1, H0408:1, H0288:1, H0688:1, H0424:1, H0644:1, H0383:1, L0772:1, L0764:1, L0662:1, L0364:1, L0653:1, L0782:1, L0789:1, L0666:1, L0663:1, L0664:1, H0144:1, S0148:1, H0593:1, H0666:1, S0330:1, S0044:1, S0037:1, S0114:1, L0757:1, S0031:1, H0667:1 and H0506:1.
86	HKMLM11	514788	96	AR060:13, AR039:7, AR282:7, AR170:7, AR252:7, AR263:7, AR309:7, AR299:6, AR224:6, AR096:5, AR161:5, AR162:5, AR264:5, AR163:5, AR311:5, AR165:5, AR214:5, AR225:5, AR235:5, AR164:5, AR277:5, AR166:5, AR308:5, AR245:5, AR246:5, AR217:5, AR182:5, AR168:4, AR283:4, AR195:4, AR275:4, AR316:4, AR271:4, AR171:4, AR312:4, AR261:4, AR053:4, AR212:4, AR222:4, AR272:4, AR270:4, AR192:4, AR213:4, AR274:4, AR193:4, AR313:4, AR173:4, AR300:4, AR286:3, AR175:3, AR089:3, AR291:3, AR180:3, AR181:3, AR269:3, AR288:3, AR223:3, AR176:3, AR169:3, AR297:3, AR289:3, AR250:3, AR285:3, AR254:3, AR201:3, AR239:3, AR229:3, AR267:3, AR104:3, AR293:3, AR198:3, AR240:3, AR230:3, AR205:3, AR243:3, AR296:3, AR196:3, AR236:3, AR227:3, AR247:3, AR216:3, AR204:3, AR172:3, AR295:3, AR268:2, AR199:2, AR257:2, AR178:2, AR055:2, AR221:2, AR237:2, AR234:2, AR174:2, AR177:2, AR287:2, AR294:2, AR188:2, AR033:2, AR238:2, AR218:2, AR231:2, AR266:2, AR210:2, AR226:2, AR228:2, AR232:2, AR185:2, AR262:2, AR061:2, AR255:2, AR233:2, AR203:2, AR191:2, AR200:2, AR260:2, AR290:2, AR189:2, AR179:2, AR258:2, AR219:2, AR197:1, AR242:1, AR183:1, AR215:1, H0620:7, L3659:3, S0442:3, H0036:3, H0150:3, S0410:2, H0722:2, H0431:2, H0012:2, L0774:2, H0740:1, H0341:1, S0358:1, H0792:1, H0590:1, H0746:1, H0510:1, H0059:1, T0042:1, L0475:1, L0803:1, L0775:1, H0593:1, L3215:1, S0013:1, L0758:1 and H0707:1.
87	HKMMW74	581399	97	AR229:11, AR313:11, AR163:10, AR162:10, AR161:10, AR242:9, AR176:9, AR039:9, AR204:9, AR197:8, AR309:8, AR192:8, AR180:8, AR264:8, AR181:8, AR178:8, AR089:8, AR177:8, AR164:8, AR247:7, AR268:7, AR196:7, AR239:7, AR166:7, AR182:7, AR252:7, AR271:7, AR246:7, AR282:7, AR300:7, AR165:7, AR269:7, AR233:7, AR173:7, AR174:7, AR179:7, AR267:6, AR236:6, AR228:6, AR238:6, AR175:6, AR198:6, AR096:6, AR060:6, AR299:6, AR235:6, AR257:6, AR240:6, AR261:6, AR055:6, AR293:6, AR275:6, AR226:5, AR237:5, AR185:5, AR183:5, AR243:5, AR201:5, AR234:5, AR195:5, AR250:5, AR207:5, AR291:5, AR245:5, AR316:5, AR266:5, AR191:5, AR312:5, AR053:5, AR227:5, AR231:5, AR254:5, AR230:5, AR262:5, AR270:5, AR203:5, AR224:4, AR289:4, AR263:4, AR285:4, AR212:4, AR193:4, AR199:4, AR258:4, AR216:4, AR218:4, AR061:4, AR213:4, AR255:4, AR217:4, AR297:4, AR200:4, AR104:4, AR272:4,

88	HLDON23	636083	98	AR232:4, AR205:4, AR274:4, AR296:4, AR295:3, AR286:3, AR033:3, AR189:3, AR287:3, AR290:3, AR256:3, AR190:3, AR311:3, AR283:3, AR169:3, AR168:3, AR170:3, AR215:3, AR253:3, AR308:3, AR288:3, AR188:3, AR171:3, AR214:3, AR233:3, AR219:2, AR294:2, AR221:2, AR260:2, AR172:2, AR210:1, AR225:1, H0431:1 AR235:6, AR196:5, AR161:5, AR162:5, AR163:4, AR264:4, AR176:4, AR165:4, AR238:4, AR214:4, AR181:4, AR166:4, AR236:4, AR191:4, AR253:4, AR188:4, AR177:3, AR261:3, AR199:3, AR252:3, AR288:3, AR247:3, AR033:3, AR182:3, AR286:3, AR190:3, AR296:3, AR170:3, AR262:3, AR262:3, AR200:3, AR242:3, AR255:3, AR183:3, AR295:3, AR205:3, AR297:3, AR224:3, AR285:3, AR312:3, AR287:3, AR268:3, AR189:3, AR257:3, AR282:3, AR291:3, AR175:3, AR309:3, AR270:3, AR171:3, AR180:3, AR299:3, AR293:2, AR217:2, AR222:2, AR179:2, AR277:2, AR271:2, AR229:2, AR272:2, AR174:2, AR240:2, AR225:2, AR243:2, AR173:2, AR308:2, AR228:2, AR289:2, AR203:2, AR239:2, AR254:2, AR226:2, AR233:2, AR213:2, AR104:2, AR258:2, AR290:2, AR227:2, AR294:2, AR267:2, AR234:2, AR096:2, AR169:2, AR237:2, AR210:2, AR231:2, AR313:2, AR311:2, AR218:2, AR219:2, AR172:2, AR275:2, AR039:2, AR060:2, AR316:2, AR211:2, AR300:2, AR230:2, AR185:2, AR061:1, AR089:1, AR216:1, AR212:1, AR193:1, AR260:1, AR201:1, AR232:1, AR055:1, L0805:8, L0809:6, L0439:5, L0775:5, L0748:4, L0800:3, L0662:3, L0659:3, L0750:3, L0758:3, H0208:2, H0123:2, H0617:2, L0769:2, L0803:2, L0776:2, L0666:2, L0438:2, L0780:2, L0731:2, L3643:1, H0741:1, H0497:1, L0622:1, T0109:1, H0581:1, L0738:1, H0546:1, H0024:1, T0010:1, H0510:1, H0428:1, H0622:1, H0673:1, H0598:1, S0036:1, H0163:1, H0413:1, L0370:1, T0041:1, L0637:1, L5566:1, L0667:1, L0772:1, L0646:1, L0764:1, L0794:1, L0766:1, L0649:1, L0657:1, L0788:1, L0663:1, S0374:1, H0666:1, S0330:1, H0539:1, H0521:1, H0696:1, H0478:1, L0741:1, L0751:1, L0745:1, L0747:1, L0749:1 and L0752:1
89	HLDQR62	753742	99	AR165:9, AR164:9, AR162:8, AR166:8, AR163:8, AR161:8, AR195:7, AR242:7, AR197:6, AR176:6, AR207:6, AR181:6, AR178:5, AR254:5, AR272:5, AR245:5, AR239:5, AR257:4, AR261:4, AR170:4, AR193:4, AR252:4, AR282:4, AR311:4, AR308:4, AR212:4, AR288:4, AR297:4, AR228:4, AR168:3, AR230:3, AR173:3, AR266:3, AR235:3, AR255:3, AR262:3, AR174:3, AR199:3, AR180:3, AR214:3, AR175:3, AR190:3, AR201:3, AR291:3, AR183:3, AR237:3, AR191:3, AR287:3, AR286:3, AR196:3, AR236:3, AR232:3, AR229:3, AR089:3, AR289:3, AR243:3, AR171:3, AR270:3, AR217:3, AR182:3, AR238:3, AR203:3, AR205:3, AR189:3, AR233:3, AR309:2, AR053:2, AR177:2, AR188:2, AR215:2, AR210:2, AR274:2, AR234:2, AR221:2, AR296:2, AR268:2, AR263:2, AR293:2, AR204:2, AR179:2, AR240:2, AR227:2, AR312:2, AR033:2, AR310:2, AR226:2, AR264:2, AR246:2, AR185:2, AR216:2, AR200:2, AR225:2, AR295:2, AR172:2, AR258:2, AR061:2, AR247:2, AR224:2, AR260:2, AR231:2, AR285:2, AR267:2, AR277:2, AR198:2, AR275:2, AR060:2, AR250:2, AR256:2, AR213:2, AR269:2, AR211:2, AR299:2, AR290:2, AR313:2, AR316:2, AR192:1, AR283:1, AR104:1, AR294:1, AR055:1, AR271:1, AR281:1, AR300:1, AR039:1, AR280:1, AR052:1, S0007:10, L0748:7, H0013:3, S0010:3, L0771:3, L0438:3, L0439:3, L0591:3, S0040:2, S0222:2, H0156:2, H0083:2, H0510:2, S0003:2, H0032:2, L3905:2, L0519:2, H0521:2, S0260:2, L0596:2, S0276:2, H0265:1, H0556:1, S0134:1, L3002:1, H0675:1, H0734:1, S0346:1, H0196:1, H0309:1, H0327:1, H0051:1, H0266:1, S0314:1, S0022:1, H0031:1, H0553:1, H0212:1, H0038:1, H0380:1, H0264:1, H0100:1, H0509:1, S0144:1, L0763:1, L0372:1, L0374:1, L0803:1, L0775:1, L0776:1, L0809:1, S0216:1, L2260:1, L0710:1, L2261:1, L2654:1, S0148:1, L3831:1, H0670:1, H0539:1, H0518:1, H0696:1, S0146:1, S0406:1, S0028:1, L0749:1, L0779:1, S0026:1, S0192:1 and S0242:1
90	HLDQU79	740755	100	AR253:8, AR171:7, AR245:6, AR243:5, AR183:5, AR263:5, AR264:4, AR250:4, AR269:4, AR060:4, AR180:4, AR270:4, AR309:4, AR162:4, AR268:4, AR161:4, AR165:4, AR192:4, AR176:4, AR055:4, AR163:4, AR213:4, AR195:4,

91	HLHAL68	684216	101	AR271:4, AR166:3, AR275:3, AR240:3, AR282:3, AR312:3, AR246:3, AR178:3, AR181:3, AR311:3, AR168:3, AR289:3, AR182:3, AR193:3, AR217:3, AR179:3, AR212:3, AR237:3, AR238:3, AR299:3, AR199:3, AR252:3, AR229:3, AR242:2, AR185:2, AR300:2, AR277:2, AR175:2, AR293:2, AR257:2, AR308:2, AR177:2, AR198:2, AR061:2, AR214:2, AR174:2, AR104:2, AR231:2, AR316:2, AR201:2, AR233:2, AR230:2, AR224:2, AR236:2, AR228:2, AR188:2, AR223:2, AR189:2, AR247:2, AR294:2, AR226:2, AR266:2, AR221:2, AR285:2, AR191:2, AR089:2, AR216:2, AR200:2, AR207:2, AR272:2, AR232:2, AR190:2, AR290:2, AR283:2, AR096:2, AR222:2, AR296:2, AR039:2, AR267:2, AR205:2, AR211:1, AR196:1, AR173:1, AR033:1, AR218:1, AR295:1, AR255:1, AR262:1, AR215:1, AR227:1, AR254:1, AR234:1, AR313:1, AR203:1, AR256:1, AR169:1, AR225:1, AR210:1, AR170:1, L0748:9, L0731:7, L0771:6, L0759:6, H0013:5, L0764:4, L0747:4, L0758:4, H0265:3, H0039:3, H0038:3, L0769:3, L0766:3, L0775:3, H0144:3, L0755:3, S0444:2, S0476:2, H0318:2, H0050:2, L0471:2, H0266:2, L0374:2, L0649:2, L0805:2, L0663:2, L0664:2, H0547:2, S0126:2, H0670:2, L0740:2, L0754:2, L0750:2, L0593:2, H0667:2, H0170:1, H0171:1, H0685:1, H0662:1, S0354:1, S0360:1, H0580:1, H0728:1, H0151:1, H0747:1, L3388:1, H0357:1, H0586:1, H0331:1, H0574:1, H0635:1, H0575:1, H0263:1, H0596:1, H0545:1, H0012:1, H0620:1, H0350:1, H0355:1, H0510:1, H0428:1, H0604:1, H0031:1, H0553:1, S0366:1, H0040:1, H0063:1, H0059:1, H0560:1, H0561:1, S0440:1, S0422:1, H0529:1, L0640:1, L0637:1, L0761:1, L0772:1, L0646:1, L4556:1, L0774:1, L0375:1, L0653:1, L0382:1, L5622:1, L0793:1, L4501:1, H0723:1, L0352:1, S0152:1, S0350:1, H0521:1, H0696:1, S0044:1, H0627:1, S0027:1, L0749:1, L0752:1, H0595:1, S0436:1, L0591:1, L0595:1, L0361:1, S0011:1, S0194:1, S0276:1 and H0423:1.
92	HLIBD68	778073	102	AR089:14, AR060:10, AR299:10, AR185:8, AR096:7, AR055:7, AR039:6, AR283:5, AR316:5, AR313:5, AR282:5, AR240:4, AR218:4, AR104:4, AR300:3, AR221:3, AR277:3, AR219:3, AR168:3, AR053:2, AR207:2, AR264:2, AR217:2, AR266:2, AR172:2, AR171:1, AR294:1, AR166:1, AR291:1, AR213:1, AR210:1, AR199:1, AR215:1, AR161:1, AR230:1, AR162:1, AR163:1, H0024:1
93	HLICQ90	791828	103	AR253:19, AR313:9, AR212:8, AR312:7, AR053:7, AR250:7, AR264:6, AR161:6, AR162:6, AR263:6, AR309:6, AR163:6, AR165:6, AR197:6, AR096:6, AR166:6, AR164:6, AR089:6, AR173:6, AR180:6, AR178:5, AR198:5, AR240:5, AR213:5, AR221:4, AR308:4, AR311:4, AR300:4, AR175:4, AR229:4, AR269:4, AR181:4, AR242:4, AR274:4, AR247:4, AR168:4, AR257:4, AR193:4, AR177:4, AR192:4, AR183:4, AR195:4, AR235:3, AR270:3, AR262:3, AR266:3, AR282:3, AR316:3, AR225:3, AR060:3, AR196:3, AR275:3, AR299:3, AR182:3, AR277:3, AR245:3, AR293:3, AR207:3, AR174:3, AR254:3, AR179:3, AR296:3, AR261:3, AR238:3, AR233:3, AR185:3, AR218:3, AR258:3, AR268:3, AR295:3, AR205:3, AR226:3, AR219:3, AR271:3, AR199:3, AR236:3, AR289:3, AR234:2, AR224:2, AR267:2, AR201:2, AR297:2, AR287:2, AR033:2, AR188:2, AR191:2, AR189:2, AR286:2, AR231:2, AR230:2, AR255:2, AR237:2, AR291:2, AR200:2, AR246:2, AR288:2, AR272:2, AR203:2, AR239:2, AR285:2, AR190:2, AR290:2, AR227:2, AR204:2, AR222:2, AR243:2, AR228:2, AR104:2, AR055:1, AR216:1, AR171:1, AR294:1, AR170:1, AR172:1, AR217:1, AR211:1, L0157:7, L0794:6, H0040:4, L0439:4, L0758:4, H0556:3, L0803:3, L0005:2, L0471:2, H0059:2, T0004:2, L0769:2, L0761:2, L0805:2, T0002:1, H0685:1, S0134:1, S0110:1, H0176:1, S0356:1, S0222:1, H0441:1, H0370:1, H0486:1, H0014:1, H0083:1, H0355:1, H0286:1, H0606:1, H0163:1, H0090:1, H0561:1, L0521:1, L0766:1, L0774:1, L0809:1, L0788:1, L0665:1, H0539:1, H0696:1, L0748:1, L0749:1, L0777:1, H0543:1 and H0423:1.

94	HLTHR66	699812	104	AR240:26, AR198:25, AR201:24, AR274:22, AR200:22, AR313:22, AR271:21, AR195:20, AR242:18, AR221:18, AR224:18, AR174:18, AR275:18, AR165:18, AR316:17, AR164:17, AR185:17, AR104:17, AR290:17, AR222:17, AR210:16, AR223:16, AR269:16, AR033:16, AR188:16, AR268:16, AR253:16, AR211:16, AR166:15, AR192:15, AR295:15, AR193:14, AR173:14, AR196:14, AR089:14, AR175:14, AR296:14, AR199:14, AR172:14, AR162:13, AR161:13, AR207:13, AR270:13, AR190:13, AR180:13, AR225:13, AR177:13, AR183:13, AR291:12, AR299:12, AR235:12, AR285:12, AR163:12, AR191:12, AR247:12, AR266:12, AR171:12, AR178:11, AR289:11, AR288:11, AR060:11, AR286:11, AR204:11, AR300:11, AR297:11, AR267:10, AR282:10, AR287:10, AR255:10, AR168:10, AR261:10, AR257:10, AR283:9, AR262:9, AR203:9, AR238:9, AR215:9, AR214:9, AR179:9, AR170:8, AR181:8, AR256:8, AR293:8, AR236:8, AR231:8, AR229:7, AR260:7, AR277:7, AR182:7, AR258:7, AR176:7, AR234:7, AR226:6, AR294:6, AR237:6, AR055:6, AR169:5, AR230:5, AR217:5, AR232:5, AR216:4, AR239:4, AR061:4, AR233:4, AR227:3, AR228:3, H0046:10, L0748:6, L0758:3, L0776:2, L0742:2, L0744:2, L0750:2, S0444:1, S0360:1, H0619:1, L0717:1, H0331:1, H0013:1, H0235:1, H0355:1, H0687:1, H0674:1, H0038:1, H0623:1, L0805:1, L0809:1, L0789:1, L0666:1, L0663:1, S0428:1, H0520:1, H0539:1, S0404:1, L0740:1, L0749:1, L0756:1, S0031:1, S0026:1 and H0008:1.
				AR282:6, AR221:4, AR235:3, AR176:3, AR266:3, AR215:3, AR269:3, AR171:3, AR270:3, AR308:2, AR183:2, AR196:2, AR217:2, AR172:2, AR177:2, AR197:2, AR222:2, AR268:2, AR295:2, AR228:2, AR236:2, AR267:2, AR188:2, AR238:2, AR261:2, AR309:2, AR255:2, AR296:2, AR233:2, AR207:2, AR291:2, AR257:2, AR290:2, AR232:2, AR193:1, AR277:1, AR178:1, AR283:1, AR089:1, AR181:1, AR164:1, AR203:1, AR264:1, AR212:1, AR166:1, AR231:1, AR247:1, AR293:1, AR205:1, AR055:1, AR316:1, AR300:1, AR175:1, AR287:1, AR189:1, AR168:1, AR234:1, AR161:1, AR174:1, AR239:1, H0036:2, S0132:1, S0010:1, S0250:1, H0591:1 and H0130:1.
				AR060:7, AR055:7, AR185:6, AR313:6, AR218:5, AR300:5, AR240:5, AR089:4, AR282:4, AR299:4, AR283:4, AR039:3, AR096:3, AR316:3, AR104:3, AR277:3, AR219:2, H0170:1, S6026:1 and H0591:1.
95	HLTIP94	1087335	105	
96	HLWAA17	629552	106	AR273:12, AR184:12, AR248:11, AR281:9, AR183:8, AR265:8, AR314:7, AR280:7, AR315:7, AR269:7, AR268:6, AR270:6, AR241:6, AR290:6, AR249:5, AR298:5, AR244:5, AR292:5, AR274:4, AR096:4, AR291:4, AR271:4, AR238:4, AR251:4, AR310:4, AR052:4, AR309:4, AR215:4, AR198:4, AR182:4, AR219:4, AR226:4, AR312:4, AR206:4, AR275:4, AR243:4, AR313:4, AR267:4, AR231:4, AR186:4, AR218:4, AR272:4, AR282:4, AR253:4, AR165:4, AR225:4, AR164:3, AR192:3, AR296:3, AR240:3, AR242:3, AR039:3, AR311:3, AR284:3, AR232:3, AR089:3, AR175:3, AR237:3, AR196:3, AR207:3, AR213:3, AR161:3, AR061:3, AR234:3, AR285:3, AR247:3, AR227:3, AR185:3, AR216:3, AR229:3, AR289:2, AR053:2, AR033:2, AR277:2, AR193:2, AR195:2, AR205:2, AR316:2, AR264:2, AR212:2, AR286:2, AR188:2, AR293:2, AR174:2, AR297:2, AR222:2, AR300:2, AR191:2, AR190:2, AR177:2, AR288:2, AR295:2, AR283:2, AR162:2, AR263:2, AR055:2, AR299:2, AR104:2, AR261:2, AR166:2, AR294:2, AR266:2, AR181:2, AR214:2, AR189:2, AR259:2, AR246:2, AR201:1, AR060:1, AR257:1, AR204:1, AR233:1, AR199:1, AR179:1, AR173:1, AR200:1, AR258:1, AR210:1, AR252:1, AR168:1, AR256:1, AR194:1, AR255:1, AR236:1, S0410:24, L0748:18, S0436:12, H0547:8, L0731:8, H0556:7, H0039:6, L0666:6, H0046:5, H0059:5, L0775:5, L0439:5, L0755:5, H0622:4, L0662:4, L0740:4, L0751:4, L0779:4, H0575:3, H0553:3, H0529:3, L0769:3, L0659:3, L5623:3, L0588:3, L0593:3, S0011:3, H0255:2, S0418:2, S0442:2, S0046:2, H0586:2, S0049:2,

97	HL YAC95	778075	107	<p>H0424:2, H0644:2, H0560:2, H0561:2, S0002:2, S0426:2, L0763:2, L0772:2, L0646:2, L0655:2, L0527:2, L0518:2, L0783:2, L0809:2, L0665:2, L0438:2, H0519:2, H0689:2, H0672:2, H0555:2, H0631:2, S0206:2, L0757:2, L0758:2, L0485:2, L0608:2, L0601:2, H0543:2, H0171:1, H0265:1, S0040:1, H0294:1, T0049:1, S0134:1, H0583:1, L0657:1, H0484:1, H0661:1, H0125:1, S0420:1, S0354:1, S0358:1, S0360:1, S0408:1, H0580:1, H0742:1, S0132:1, S0476:1, H0550:1, H0431:1, H0592:1, H0587:1, H0333:1, H0270:1, H0013:1, H0599:1, T0082:1, H0318:1, H0251:1, T0110:1, H0545:1, H0150:1, H0041:1, H0620:1, H0024:1, H0057:1, H0014:1, S0051:1, H0083:1, S0024:1, H0355:1, H0266:1, H0271:1, H0188:1, S0250:1, H0328:1, H0615:1, L0483:1, H0030:1, H0031:1, H0111:1, H0032:1, H0383:1, H0674:1, H0211:1, L0456:1, H0068:1, H0135:1, H0040:1, H0634:1, H0551:1, H0412:1, S0450:1, H0647:1, H0646:1, S0144:1, S0142:1, S0344:1, S0210:1, L0761:1, L0372:1, L0764:1, L0767:1, L0768:1, L0649:1, L5574:1, L0375:1, L0651:1, L0784:1, L0654:1, L0807:1, L0515:1, L0658:1, L0383:1, L0663:1, L0664:1, S0006:1, H0520:1, H0593:1, H0682:1, H0684:1, H0658:1, H0670:1, H0696:1, S0406:1, S0027:1, L0754:1, L0747:1, L0750:1, L0752:1, S0434:1, L0591:1, L0603:1, S0106:1, H0668:1, H0542:1 and H0423:1.</p> <p>AR176:19, AR182:14, AR261:10, AR192:9, AR262:9, AR191:8, AR235:7, AR296:7, AR231:7, AR201:6, AR232:6, AR234:6, AR233:6, AR228:6, AR183:6, AR246:6, AR229:6, AR239:6, AR200:6, AR287:5, AR207:5, AR291:5, AR260:5, AR294:5, AR245:5, AR179:5, AR243:5, AR266:5, AR177:5, AR168:5, AR285:5, AR162:5, AR289:5, AR185:4, AR237:4, AR161:4, AR221:4, AR236:4, AR264:4, AR274:4, AR227:4, AR215:4, AR222:4, AR223:4, AR230:4, AR193:4, AR290:4, AR313:3, AR196:3, AR263:3, AR174:3, AR204:3, AR293:3, AR205:3, AR189:3, AR217:3, AR282:3, AR033:3, AR257:3, AR288:3, AR203:3, AR312:2, AR267:2, AR275:2, AR216:2, AR295:2, AR311:2, AR258:2, AR316:2, AR181:2, AR225:2, AR061:2, AR214:2, AR240:2, AR039:2, AR299:2, AR170:2, AR232:2, AR199:2, AR238:2, AR247:2, AR256:2, AR089:2, AR224:2, AR219:2, AR096:2, AR211:2, AR060:1, AR188:1, AR175:1, AR226:1, AR226:1, AR173:1, AR286:1, AR269:1 H0445:1</p>
98	HMA DK33	561941	108	<p>AR283:32, AR096:20, AR089:18, AR218:17, AR104:17, AR277:16, AR039:16, AR316:15, AR282:15, AR055:13, AR219:13, AR060:13, AR313:13, AR299:12, AR252:9, AR185:8, AR240:8, AR300:8, AR253:8, AR271:7, AR245:6, AR309:6, AR215:6, AR170:6, AR198:6, AR195:5, AR169:5, AR053:5, AR254:5, AR311:5, AR214:5, AR264:5, AR225:5, AR223:5, AR224:5, AR197:5, AR263:5, AR266:4, AR217:4, AR312:4, AR193:4, AR308:4, AR161:4, AR213:4, AR162:4, AR180:4, AR212:4, AR163:4, AR216:4, AR168:4, AR291:4, AR222:4, AR295:4, AR177:4, AR183:4, AR165:4, AR275:4, AR192:4, AR221:4, AR235:4, AR261:4, AR269:3, AR270:3, AR176:3, AR164:3, AR210:3, AR288:3, AR172:3, AR033:3, AR205:3, AR181:3, AR246:3, AR166:3, AR171:3, AR175:3, AR236:3, AR296:3, AR285:3, AR207:3, AR247:3, AR199:3, AR201:3, AR243:3, AR267:3, AR297:3, AR293:3, AR255:3, AR182:3, AR294:3, AR268:2, AR286:2, AR289:2, AR257:2, AR204:2, AR287:2, AR258:2, AR230:2, AR200:2, AR173:2, AR196:2, AR238:2, AR274:2, AR174:2, AR262:2, AR189:2, AR228:2, AR179:2, AR211:2, AR191:2, AR231:2, AR290:2, AR203:2, AR232:2, AR229:2, AR233:2, AR190:2, AR227:2, AR272:2, AR234:2, AR239:2, AR178:2, AR237:2, AR061:1, AR226:1, AR260:1, L0438:9, L0439:9, L0776:8, H0144:7, L0741:7, H0271:6, S0222:5, L0769:5, H0052:4, L0770:4, L0766:4, L0659:4, L0666:4, L0759:4, H0295:3, S0360:3, L0370:3, L0510:3, H0556:2, S0007:2, H0261:2, L0021:2, H0046:2, H0009:2, S0051:2, S0366:2, L0763:2, L0784:2, L0633:2, L0783:2, L0789:2, L0790:2, L0792:2, L0743:2, L0747:2, L0749:2, L0756:2, L0758:2, L0758:2, H0445:2, L0588:2, L0594:2, L0366:2, H0265:1, S6024:1, H0638:1, S0376:1, S0045:1, H0550:1, H0370:1, H0587:1, N0009:1, H0013:1, S0280:1, H0599:1, S0010:1, S0049:1, H0545:1, H0457:1, H0569:1, H0012:1, H0373:1, H0051:1, H0510:1, H0266:1, H0179:1,</p>

				H0416:1, H0328:1, S0036:1, H0634:1, H0087:1, H0412:1, L0351:1, S0144:1, L0638:1, L0761:1, L0646:1, L0662:1, L0767:1, L0768:1, L0388:1, L0803:1, L0774:1, L0775:1, L0375:1, L0651:1, L0806:1, L0515:1, L0809:1, S0428:1, S0216:1, H0699:1, H0693:1, H0684:1, H0648:1, H0710:1, H0521:1, H0696:1, H0187:1, H0436:1, S0028:1, L0750:1, L0779:1, L0731:1, S0260:1, H0595:1, L0599:1, S0192:1, S0276:1, H0542:1 and H0352:1.
99	HMMAM115	1352406	109	AR060:14, AR283:13, AR055:10, AR277:9, AR282:9, AR185:9, AR104:9, AR300:8, AR096:8, AR316:8, AR299:8, AR218:7, AR219:7, AR039:7, AR313:6, AR240:6, AR089:6, H0624:2, S0354:2, S0442:1, S0444:1, S0278:1, S0222:1, H0586:1, L0021:1, H0036:1, H0031:1, L0769:1, L0804:1, L0774:1, H0658:1, H0521:1, S0406:1, L0748:1 and S0462:1.
	HMMAM115	1049263	245	
100	HMCIFY13	635301	110	AR176:8, AR161:6, AR162:6, AR266:6, AR181:6, AR269:6, AR163:6, AR172:6, AR228:5, AR267:5, AR233:5, AR055:5, AR268:5, AR229:5, AR165:5, AR309:5, AR238:4, AR183:4, AR178:4, AR164:4, AR237:4, AR215:4, AR257:4, AR182:4, AR166:4, AR168:4, AR217:4, AR236:4, AR239:4, AR261:4, AR180:4, AR291:4, AR222:4, AR290:4, AR270:4, AR170:4, AR177:4, AR060:4, AR240:4, AR282:4, AR247:4, AR272:4, AR275:4, AR293:4, AR288:4, AR171:3, AR169:3, AR255:3, AR289:3, AR179:3, AR203:3, AR175:3, AR264:3, AR231:3, AR061:3, AR225:3, AR191:3, AR294:3, AR287:3, AR230:3, AR223:3, AR226:3, AR173:3, AR232:3, AR234:3, AR200:3, AR214:3, AR216:3, AR221:3, AR224:3, AR196:3, AR227:3, AR104:3, AR199:3, AR285:3, AR262:3, AR277:2, AR311:2, AR297:2, AR300:2, AR096:2, AR190:2, AR295:2, AR174:2, AR188:2, AR316:2, AR286:2, AR312:2, AR089:2, AR263:2, AR189:2, AR258:2, AR274:2, AR053:2, AR283:2, AR299:2, AR185:1, AR296:1, AR204:1, AR260:1, AR210:1, AR039:1, AR218:1, L0800:2, H0550:1, H0497:1, S0344:1, L0769:1, L0789:1 and L0749:1.
101	HMDAB56	560676	111	AR168:4, AR161:4, AR162:4, AR212:4, AR163:4, AR223:4, AR222:4, AR216:4, AR172:4, AR264:3, AR214:3, AR282:3, AR311:3, AR170:3, AR270:3, AR250:3, AR277:3, AR225:3, AR299:3, AR165:3, AR313:3, AR164:3, AR171:2, AR253:2, AR096:2, AR199:2, AR201:2, AR308:2, AR221:2, AR263:2, AR039:2, AR312:2, AR205:2, AR196:2, AR294:2, AR213:2, AR267:2, AR217:2, AR290:2, AR274:2, AR166:2, AR291:2, AR295:2, AR089:2, AR193:2, AR191:1, AR316:1, AR033:1, AR240:1, AR269:1, AR215:1, AR266:1, AR224:1, AR195:1, AR293:1, AR283:1, AR183:1, AR189:1, AR262:1, AR104:1, AR210:1, AR247:1, AR239:1, AR268:1, AR169:1, L0809:2, H0346:1, H0271:1, L0774:1 and L0532:1.
102	HMEED18	560775	112	AR252:37, AR186:32, AR250:28, AR169:20, AR254:19, AR207:17, AR244:17, AR195:16, AR033:15, AR284:15, AR291:15, AR214:14, AR165:14, AR298:14, AR264:14, AR222:14, AR181:13, AR245:13, AR164:13, AR197:13, AR246:13, AR224:13, AR168:13, AR253:13, AR308:13, AR223:12, AR269:12, AR285:12, AR225:12, AR263:12, AR212:12, AR172:12, AR166:12, AR274:12, AR311:12, AR162:12, AR161:12, AR163:12, AR184:12, AR215:11, AR192:11, AR221:11, AR052:11, AR240:11, AR104:11, AR183:11, AR171:11, AR174:11, AR170:11, AR176:11, AR173:11, AR193:11, AR206:11, AR201:11, AR053:11, AR292:10, AR288:10, AR231:10, AR237:10, AR261:10, AR235:10, AR295:10, AR273:10, AR236:10, AR293:10, AR312:10, AR216:10, AR205:10, AR217:10, AR178:10, AR196:10, AR213:10, AR061:10, AR270:9, AR243:9, AR290:9, AR282:9, AR191:9, AR182:9, AR268:9, AR188:9, AR286:9, AR267:9, AR189:9, AR238:9, AR229:9, AR177:9, AR226:9, AR294:9, AR242:9, AR289:9, AR175:8, AR299:8, AR310:8, AR266:8, AR199:8, AR096:8, AR247:8, AR039:8, AR297:8, AR180:8, AR227:8, AR296:8, AR271:8, AR190:8, AR313:8, AR309:8, AR194:7, AR287:7, AR234:7, AR185:7, AR275:7, AR248:7, AR210:7, AR200:7, AR089:7, AR277:7, AR300:7, AR316:7, AR204:7, AR272:7, AR179:7, AR251:6, AR259:6, AR262:6, AR211:6, AR255:6, AR241:6, AR314:6, AR055:6, AR198:6, AR256:6, AR257:6, AR258:6, AR232:6, AR203:5, AR239:5, AR211:6, AR255:6, AR241:6, AR314:6, AR055:6, AR198:6, AR256:6, AR257:6, AR258:6, AR232:6, AR203:5, AR239:5,

103	HMEFT54	520307	113	AR233:5, AR060:5, AR219:5, AR218:5, AR202:5, AR249:5, AR280:5, AR260:4, AR228:4, AR283:4, AR315:4, AR230:4, AR265:2, L0439:20, L0157:8, L0794:8, L0805:6, H0739:5, L0731:5, L0804:4, S0222:3, L0766:3, L0438:3, S0356:2, H0741:2, H0050:2, S0144:2, L0803:2, L0655:2, L2654:2, H0521:2, H0522:2, L0779:2, L0777:2, L0755:2, L0759:2, H0265:1, S6024:1, S0116:1, S0444:1, H0733:1, S6026:1, H0298:1, L0622:1, L0486:1, H0013:1, H0250:1, H0635:1, H0156:1, S0474:1, H0581:1, H0046:1, L0471:1, H0012:1, H0014:1, H0373:1, H0073:1, L0766:1, S0336:1, H0039:1, S0036:1, H0040:1, H0634:1, H0551:1, H0561:1, S0438:1, S0440:1, H0529:1, L0769:1, L0764:1, L0602:1, L0774:1, L0775:1, L0809:1, L0790:1, L0792:1, L0666:1, L0664:1, L0665:1, L0709:1, L2653:1, H0144:1, H0659:1, H0658:1, H0670:1, S0378:1, H0696:1, H0555:1, H0576:1, S0028:1, L0745:1, L0747:1, L0780:1, S0436:1 and H0668:1.
104	HMEGF92	520304	114	AR060:7, AR055:7, AR039:6, AR282:6, AR223:5, AR196:5, AR089:5, AR104:5, AR269:5, AR176:5, AR161:5, AR162:5, AR182:5, AR240:5, AR163:5, AR096:5, AR231:5, AR165:5, AR299:5, AR235:5, AR207:5, AR309:5, AR204:5, AR313:4, AR243:4, AR181:4, AR246:4, AR316:4, AR164:4, AR166:4, AR300:4, AR277:4, AR183:4, AR170:4, AR228:4, AR185:4, AR229:4, AR255:4, AR274:4, AR221:4, AR266:4, AR283:4, AR247:4, AR290:4, AR236:4, AR261:4, AR294:4, AR267:3, AR192:4, AR270:3, AR178:3, AR175:3, AR169:3, AR234:3, AR179:3, AR275:3, AR262:3, AR252:3, AR199:3, AR197:3, AR219:3, AR253:3, AR233:3, AR061:3, AR264:3, AR271:3, AR180:3, AR173:3, AR263:3, AR295:3, AR193:3, AR177:3, AR288:3, AR237:3, AR257:3, AR268:3, AR195:3, AR174:3, AR286:3, AR218:3, AR191:3, AR239:3, AR171:3, AR203:3, AR250:3, AR285:3, AR287:3, AR188:3, AR216:3, AR297:3, AR296:3, AR189:3, AR201:3, AR214:2, AR226:2, AR291:2, AR293:2, AR232:2, AR222:2, AR200:2, AR190:2, AR258:2, AR168:2, AR227:2, AR312:2, AR289:2, AR308:2, AR260:2, AR230:2, AR272:1, AR210:1, AR311:1, AR242:1, AR256:1, AR033:1, L0757:3, L0662:2, H0686:1, S0444:1, H0266:1, L0055:1, L0763:1, L0800:1, L0764:1, L0768:1, L0805:1, L0653:1, L0666:1, H0690:1, H0672:1, L0751:1, L0777:1 and L0758:1.
105	HMSDL37	973996	115	AR233:16, AR178:13, AR176:13, AR261:11, AR061:11, AR257:11, AR104:11, AR228:10, AR182:10, AR196:10, AR238:10, AR299:9, AR236:9, AR293:8, AR239:8, AR190:8, AR231:8, AR288:8, AR232:8, AR291:8, AR161:8, AR229:8, AR162:8, AR175:8, AR163:7, AR258:7, AR269:7, AR185:7, AR266:7, AR033:7, AR174:7, AR164:6, AR200:6, AR191:6, AR300:6, AR250:6, AR237:6, AR234:6, AR267:6, AR287:6, AR166:6, AR165:5, AR294:5, AR203:5, AR286:5, AR268:5, AR262:5, AR055:5, AR247:5, AR226:5, AR285:5, AR179:5, AR295:5, AR089:5, AR230:5, AR216:5, AR316:5, AR183:5, AR252:5, AR297:5, AR181:5, AR060:5, AR271:5, AR168:4, AR172:4, AR193:4, AR240:4, AR264:4, AR227:4, AR180:4, AR207:4, AR309:4, AR188:4, AR296:4, AR177:4, AR275:4, AR289:4, AR189:4, AR255:3, AR198:3, AR235:3, AR215:3, AR260:3, AR171:3, AR246:3, AR096:3, AR313:3, AR290:3, AR214:3, AR221:3, AR274:2, AR039:2, AR217:2, AR197:2, AR210:2, AR204:2, AR312:2, AR213:2, AR277:2, AR272:2, AR225:2, AR199:2, AR222:2, AR211:2, AR053:2, AR308:2, AR311:2, AR224:2, AR173:1, AR270:1, AR282:1, AR283:1, AR201:1, H0266:1, L0438:1 and L0439:1.
105	HMSDL37	973996	115	AR169:5, AR282:3, AR170:3, AR225:2, AR257:2, AR224:2, AR205:2, AR171:2, AR294:2, AR217:1, AR309:1, AR168:1, AR261:1, AR173:1, AR163:1, AR222:1, AR178:1, L0517:2, S0050:1, H0014:1, H0510:1, H0040:1, H0264:1, S0002:1, S0374:1 and L0758:1.
	HMSDL37	895429	246	
	HMSDL37	904241	247	
	HMSDL37	750927	248	

106	HMSFI26	560229	116	AR313:11, AR039:11, AR089:8, AR096:8, AR218:8, AR176:7, AR162:7, AR219:7, AR163:7, AR161:7, AR299:6, AR165:6, AR300:6, AR221:6, AR180:6, AR060:6, AR164:6, AR166:6, AR207:6, AR197:6, AR178:6, AR182:6, AR175:6, AR316:6, AR181:6, AR173:6, AR055:6, AR104:5, AR266:5, AR247:5, AR270:5, AR204:5, AR229:5, AR185:5, AR240:5, AR183:5, AR312:5, AR177:5, AR309:5, AR196:4, AR257:4, AR297:4, AR263:4, AR243:4, AR277:4, AR193:4, AR293:4, AR225:4, AR269:4, AR264:4, AR179:4, AR275:4, AR282:4, AR261:4, AR205:4, AR242:4, AR268:4, AR294:4, AR291:4, AR233:4, AR267:4, AR262:4, AR296:4, AR238:3, AR234:3, AR228:3, AR289:3, AR174:3, AR199:3, AR237:3, AR231:3, AR271:3, AR195:3, AR258:3, AR236:3, AR245:3, AR198:3, AR215:3, AR283:3, AR227:3, AR239:3, AR212:3, AR203:3, AR170:3, AR246:3, AR286:3, AR290:3, AR285:3, AR230:3, AR295:3, AR053:3, AR201:3, AR191:3, AR255:2, AR308:2, AR272:2, AR168:2, AR033:2, AR287:2, AR217:2, AR188:2, AR222:2, AR200:2, AR061:2, AR232:2, AR189:2, AR216:2, AR288:2, AR213:2, AR274:2, AR311:2, AR171:2, AR260:2, AR190:2, AR224:2, AR210:1, AR169:1, S0002:1
107	HMVBS81	639203	117	AR215:22, AR223:21, AR214:21, AR172:20, AR225:18, AR210:16, AR170:15, AR291:14, AR199:14, AR169:14, AR224:14, AR216:14, AR171:14, AR222:13, AR168:13, AR211:12, AR221:11, AR165:11, AR231:11, AR164:11, AR166:11, AR219:11, AR289:10, AR217:10, AR061:10, AR266:10, AR235:10, AR285:10, AR283:9, AR196:9, AR218:9, AR162:9, AR243:9, AR161:9, AR261:9, AR089:9, AR163:9, AR238:8, AR255:8, AR240:8, AR200:8, AR297:8, AR296:8, AR254:8, AR287:8, AR269:8, AR245:8, AR295:7, AR290:7, AR039:7, AR246:7, AR316:7, AR282:7, AR257:7, AR247:7, AR189:7, AR226:7, AR173:7, AR188:7, AR239:7, AR183:7, AR232:7, AR180:7, AR178:7, AR256:7, AR203:6, AR250:6, AR288:6, AR267:6, AR193:6, AR234:6, AR268:6, AR237:6, AR182:6, AR176:6, AR229:6, AR293:6, AR262:6, AR175:6, AR270:5, AR212:5, AR177:5, AR205:5, AR258:5, AR272:5, AR198:5, AR236:5, AR191:5, AR185:5, AR104:5, AR312:5, AR311:5, AR174:5, AR300:5, AR060:5, AR286:5, AR195:5, AR260:5, AR233:4, AR294:4, AR263:4, AR190:4, AR308:4, AR228:4, AR230:4, AR299:4, AR179:4, AR277:4, AR271:4, AR096:4, AR213:4, AR275:4, AR055:4, AR264:4, AR313:4, AR201:4, AR053:4, AR197:3, AR033:3, AR181:3, AR242:3, AR253:3, AR274:3, AR207:2, AR204:2, AR309:2, AR252:2, AR192:1, H0544:4, L0775:3, L0748:3, H0265:2, H0046:2, T0010:2, H0424:2, L0769:2, L0771:2, L0774:2, L0659:2, L0382:2, H0696:2, L0750:2, L0755:2, L0731:2, L0757:2, L0758:2, L0608:2, H0685:1, S0040:1, S0114:1, S0218:1, L0785:1, H0341:1, S0212:1, H0484:1, H0662:1, S0360:1, H0411:1, H0592:1, L0623:1, H0156:1, H0253:1, H0263:1, H0204:1, H0150:1, H0050:1, H0012:1, H0510:1, H0606:1, L0055:1, S0364:1, H0124:1, H0163:1, H0090:1, H0087:1, H0413:1, H0494:1, H0509:1, S0210:1, L0770:1, L0764:1, L0773:1, L0794:1, L0766:1, L0658:1, L0666:1, S0126:1, S012:1, S3014:1, L0745:1, L0747:1, L0777:1, S0031:1, S0434:1, L0605:1, L0366:1 and H0543:1
108	HMWDC28	460487	118	AR245:5, AR176:5, AR198:5, AR161:5, AR162:4, AR204:4, AR163:4, AR207:4, AR271:4, AR309:4, AR266:4, AR164:4, AR165:4, AR166:4, AR181:3, AR221:3, AR039:3, AR252:3, AR089:3, AR254:3, AR216:3, AR182:3, AR291:3, AR177:3, AR257:3, AR224:3, AR264:3, AR312:3, AR268:3, AR275:3, AR296:3, AR178:2, AR179:2, AR228:2, AR215:2, AR267:2, AR196:2, AR229:2, AR295:2, AR311:2, AR055:2, AR233:2, AR282:2, AR096:2, AR270:2, AR288:2, AR269:2, AR191:2, AR246:2, AR289:2, AR053:2, AR185:2, AR300:2, AR285:2, AR286:2, AR236:2, AR262:2, AR316:2, AR174:2, AR255:2, AR231:2, AR313:2, AR060:2, AR201:2, AR294:2, AR287:2, AR237:2, AR243:2, AR212:2, AR240:2, AR226:2, AR232:2, AR290:2, AR283:2, AR061:2, AR261:2, AR308:2, AR168:2, AR247:2, AR203:2, AR239:2, AR253:2, AR175:2, AR277:2, AR217:2, AR293:1, AR190:1, AR272:1, AR193:1, AR227:1, AR297:1, AR213:1, AR230:1, AR258:1, AR188:1, AR180:1, AR033:1, AR195:1, AR199:1, AR183:1, AR211:1, AR235:1, H0341:2, L0803:2, L0439:2, L0747:2,

109	HMWFT65	562063	119	S0376:1, S0360:1, S0222:1, H0674:1, H0038:1, L0655:1, L0809:1, L0666:1, L0754:1, L0756:1, L0757:1 and L0591:1. AR176:6, AR183:6, AR313:6, AR173:6, AR269:6, AR290:6, AR180:6, AR247:5, AR189:5, AR162:5, AR191:5, AR161:5, AR163:5, AR039:5, AR266:5, AR274:4, AR182:4, AR055:4, AR060:4, AR165:4, AR190:4, AR263:4, AR164:4, AR270:4, AR166:4, AR264:4, AR089:4, AR267:4, AR096:4, AR175:4, AR168:3, AR255:3, AR170:3, AR257:3, AR169:3, AR179:3, AR293:3, AR196:3, AR178:3, AR217:3, AR268:3, AR275:3, AR262:3, AR291:3, AR233:3, AR229:3, AR240:3, AR237:3, AR238:3, AR218:3, AR185:3, AR228:3, AR294:3, AR171:3, AR250:3, AR316:3, AR300:3, AR188:3, AR104:3, AR174:3, AR231:3, AR296:3, AR225:3, AR224:3, AR177:3, AR261:3, AR236:3, AR061:3, AR239:3, AR226:3, AR299:3, AR285:3, AR288:3, AR277:2, AR198:2, AR272:2, AR193:2, AR201:2, AR221:2, AR200:2, AR287:2, AR230:2, AR203:2, AR286:2, AR232:2, AR289:2, AR227:2, AR214:2, AR199:2, AR295:2, AR172:2, AR297:2, AR033:2, AR282:2, AR308:2, AR219:2, AR223:2, AR258:2, AR283:2, AR271:2, AR311:1, AR260:1, AR216:1, AR234:1, AR312:1, AR245:1, AR211:1, AR212:1, AR235:1, AR195:1 H0341:1
110	HNEEE24	553558	120	AR161:8, AR162:8, AR163:8, AR055:6, AR165:5, AR164:5, AR060:5, AR172:5, AR313:4, AR169:4, AR053:4, AR269:4, AR275:4, AR089:4, AR242:4, AR263:4, AR176:4, AR264:4, AR192:4, AR240:3, AR182:3, AR205:3, AR039:3, AR235:3, AR096:3, AR212:3, AR257:3, AR268:3, AR282:3, AR195:3, AR270:3, AR104:3, AR200:3, AR197:3, AR228:3, AR185:3, AR173:3, AR316:3, AR299:3, AR233:3, AR236:3, AR189:3, AR191:3, AR283:3, AR311:3, AR300:2, AR309:2, AR267:2, AR255:2, AR229:2, AR225:2, AR245:2, AR290:2, AR295:2, AR193:2, AR308:2, AR312:2, AR277:2, AR266:2, AR237:2, AR221:2, AR199:2, AR274:2, AR238:2, AR224:2, AR262:2, AR213:2, AR181:2, AR216:2, AR180:2, AR218:2, AR261:2, AR061:2, AR247:2, AR289:2, AR178:2, AR287:2, AR175:2, AR293:2, AR297:2, AR177:2, AR190:2, AR285:2, AR226:2, AR231:2, AR219:2, AR183:2, AR179:2, AR239:2, AR196:2, AR291:2, AR217:2, AR201:2, AR288:2, AR227:1, AR272:1, AR258:1, AR294:1, AR296:1, AR232:1, AR214:1, AR260:1, AR168:1, AR174:1, AR171:1 L0747:2, L0758:2, H0580:1 and H0179:1.
111	HNFEC43	753337	121	AR273:25, AR032:20, AR274:13, AR218:10, AR241:9, AR248:9, AR277:8, AR265:8, AR186:8, AR249:8, AR312:8, AR271:8, AR313:8, AR309:7, AR183:7, AR253:7, AR299:7, AR244:6, AR251:6, AR292:6, AR219:6, AR175:6, AR310:6, AR096:5, AR213:5, AR185:5, AR053:5, AR275:5, AR202:5, AR282:5, AR039:4, AR269:4, AR270:4, AR206:4, AR055:4, AR177:4, AR225:4, AR089:4, AR060:4, AR192:4, AR293:4, AR243:4, AR280:4, AR247:4, AR300:4, AR104:4, AR033:4, AR240:4, AR061:3, AR204:3, AR217:3, AR246:3, AR316:3, AR268:3, AR165:3, AR180:3, AR198:3, AR315:3, AR164:3, AR166:3, AR184:3, AR205:3, AR264:3, AR294:3, AR314:3, AR284:3, AR290:3, AR295:2, AR168:2, AR259:2, AR267:2, AR256:2, AR179:2, AR161:2, AR221:2, AR257:2, AR163:2, AR162:2, AR170:2, AR291:2, AR200:2, AR236:2, AR262:2, AR193:2, AR283:2, AR174:2, AR197:2, AR298:2, AR233:1, AR181:1, AR222:1, AR287:1, AR258:1, AR195:1, AR194:1, AR229:1, AR196:1, AR182:1, AR173:1, AR234:1, AR239:1, AR235:1, AR230:1, AR216:1 H0521:6, H0036:2, H0052:2, H0271:2, H0551:2, H0543:2, H0265:1, H0556:1, S0354:1, H0392:1, H0581:1, H0063:1, H0059:1, H0494:1, H0561:1, L3829:1, H0520:1, H0522:1, S0436:1, L0595:1, H0506:1 and L0600:1.
112	HNFY77	634551	122	AR241:9, AR313:8, AR194:8, AR186:7, AR192:7, AR242:7, AR202:7, AR206:7, AR161:7, AR162:7, AR163:6, AR204:6, AR246:6, AR229:6, AR165:6, AR238:6, AR164:6, AR166:5, AR271:5, AR198:5, AR251:5, AR089:5, AR207:5, AR197:5, AR052:5, AR309:5, AR312:5, AR274:5, AR061:4, AR185:4, AR292:4, AR177:4, AR298:4, AR245:4, AR226:4, AR273:4, AR240:4, AR053:4, AR225:4, AR286:4, AR233:4, AR272:4, AR300:4, AR096:4, AR293:4, AR247:4, AR264:4,

113	HNFJF07	577013	123	AR205:4, AR039:4, AR234:4, AR275:3, AR237:3, AR231:3, AR195:3, AR253:3, AR060:3, AR228:3, AR201:3, AR182:3, AR284:3, AR282:3, AR174:3, AR227:3, AR269:3, AR193:3, AR289:3, AR033:3, AR294:3, AR239:3, AR285:3, AR290:3, AR184:3, AR270:3, AR265:3, AR308:3, AR181:3, AR248:3, AR232:3, AR296:3, AR291:3, AR299:3, AR297:3, AR252:3, AR259:3, AR277:3, AR310:2, AR263:2, AR230:2, AR258:2, AR224:2, AR257:2, AR295:2, AR203:2, AR213:2, AR179:2, AR055:2, AR268:2, AR104:2, AR200:2, AR316:2, AR255:2, AR212:2, AR267:2, AR215:2, AR266:2, AR183:2, AR173:2, AR175:2, AR191:2, AR287:2, AR217:2, AR222:2, AR172:2, AR196:2, AR281:1, AR189:1, AR283:1, AR218:1, AR219:1, AR214:1, AR256:1, AR262:1, AR216:1, AR210:1, L0539:1, S0442:1, H0619:1, H0581:1, T0010:1, H0416:1, H0622:1, H0131:1, H0521:1 and H0653:1.
114	HNGFR31	553552	124	AR104:20, AR055:15, AR060:14, AR229:13, AR283:12, AR039:11, AR313:10, AR089:10, AR096:9, AR316:9, AR161:8, AR162:8, AR299:8, AR163:8, AR165:7, AR282:7, AR164:7, AR166:7, AR185:6, AR240:6, AR300:6, AR274:6, AR219:5, AR053:5, AR277:5, AR263:5, AR309:5, AR275:5, AR172:5, AR181:4, AR250:4, AR257:4, AR236:4, AR177:4, AR218:4, AR261:4, AR228:4, AR171:4, AR266:4, AR183:4, AR178:4, AR238:4, AR264:4, AR225:4, AR235:4, AR255:3, AR215:3, AR293:3, AR286:3, AR233:3, AR179:3, AR222:3, AR234:3, AR262:3, AR237:3, AR247:3, AR182:3, AR287:3, AR168:3, AR272:3, AR294:3, AR288:3, AR170:3, AR196:3, AR174:3, AR269:3, AR175:3, AR297:3, AR268:3, AR226:3, AR223:3, AR201:3, AR311:3, AR239:3, AR290:3, AR200:3, AR231:3, AR308:2, AR195:2, AR199:2, AR061:2, AR227:2, AR216:2, AR285:2, AR312:2, AR296:2, AR271:2, AR232:2, AR180:2, AR270:2, AR291:2, AR258:2, AR230:2, AR191:2, AR289:2, AR224:1, AR246:1, AR295:1, AR188:1, AR193:1, AR217:1, AR242:1, AR214:1, H0271:2, H0581:1, H0051:1, H0163:1, L0599:1 and H0422:1.
115	HNGJH31	519120	125	AR060:6, AR252:6, AR055:6, AR033:5, AR161:4, AR162:4, AR254:4, AR163:4, AR309:4, AR089:4, AR235:3, AR236:3, AR104:3, AR283:3, AR165:3, AR216:3, AR164:3, AR300:3, AR166:3, AR181:3, AR185:3, AR177:3, AR228:3, AR263:3, AR299:3, AR183:3, AR267:3, AR039:3, AR182:3, AR176:2, AR197:2, AR240:2, AR201:2, AR277:2, AR289:2, AR291:2, AR282:2, AR266:2, AR293:2, AR316:2, AR255:2, AR096:2, AR238:2, AR180:2, AR257:2, AR175:2, AR218:2, AR233:2, AR215:2, AR285:2, AR264:2, AR231:2, AR239:2, AR274:2, AR229:2, AR207:2, AR262:2, AR179:2, AR286:2, AR173:2, AR288:2, AR188:2, AR198:2, AR214:2, AR192:2, AR287:2, AR190:2, AR261:2, AR237:2, AR211:2, AR297:2, AR313:2, AR178:2, AR200:2, AR247:2, AR272:2, AR270:2, AR203:2, AR269:2, AR266:2, AR290:2, AR191:2, AR212:1, AR219:1, AR268:1, AR271:1, AR275:1, AR272:1, AR189:1, AR168:1, AR294:1, AR312:1, AR174:1, AR224:1, AR234:1, AR001:1, AR193:1, AR213:1, AR258:1, AR311:1, AR222:1, S0052:1.
116	HNGJE50	561568	126	AR231:7, AR039:6, AR221:5, AR313:4, AR096:4, AR180:4, AR055:4, AR060:4, AR104:4, AR161:4, AR162:4, AR163:4, AR275:4, AR183:4, AR089:3, AR205:3, AR300:3, AR272:3, AR246:3, AR274:3, AR225:3, AR269:3, AR181:3, AR299:3, AR165:3, AR164:3, AR166:3, AR175:3, AR173:3, AR191:3, AR198:3, AR277:3, AR185:3, AR270:3, AR182:3, AR240:3, AR033:3, AR316:3, AR176:2, AR267:2, AR261:2, AR204:2, AR266:2, AR257:2, AR291:2, AR216:2, AR218:2, AR264:2, AR214:2, AR219:2, AR222:2, AR224:2, AR195:2, AR189:2, AR190:2, AR201:2, AR283:2, AR288:2, AR196:2, AR309:2, AR179:2, AR285:2, AR271:2, AR290:2, AR263:2, AR282:2, AR172:2, AR178:2, AR293:2, AR193:2, AR226:2, AR233:1, AR199:1, AR312:1, AR234:1, AR228:1, AR247:1, AR230:1, AR061:1, AR255:1, AR188:1, AR238:1, AR287:1, AR268:1, AR236:1, AR217:1, AR258:1, AR262:1, AR174:1, AR295:1, AR192:1.
				AR039:15, AR313:14, AR161:14, AR162:14, AR163:13, AR165:12, AR166:11, AR164:11, AR089:11, AR096:10, AR178:9,

117	HNGND37	839224	127	AR172:1, AR170:1, AR211:1 S0052:1 AR161:7, AR162:7, AR163:7, AR176:6, AR055:5, AR181:5, AR180:5, AR269:5, AR266:5, AR178:5, AR267:5, AR268:5, AR229:5, AR060:4, AR104:4, AR271:4, AR222:4, AR261:4, AR225:4, AR224:4, AR228:4, AR165:4, AR089:4, AR177:4, AR257:4, AR233:4, AR053:4, AR300:4, AR164:4, AR182:4, AR270:4, AR033:4, AR166:4, AR264:4, AR183:3, AR168:3, AR289:3, AR235:3, AR237:3, AR236:3, AR290:3, AR255:3, AR061:3, AR296:3, AR238:3, AR231:3, AR277:3, AR250:3, AR239:3, AR240:3, AR175:3, AR226:3, AR293:3, AR230:3, AR221:3, AR170:3, AR287:3, AR174:3, AR185:3, AR179:3, AR216:3, AR291:3, AR316:3, AR288:3, AR297:3, AR294:3, AR169:3, AR178:3, AR227:2, AR191:2, AR096:2, AR283:2, AR309:2, AR214:2, AR247:2, AR234:2, AR262:2, AR263:2, AR232:2, AR196:2, AR299:2, AR286:2, AR275:2, AR171:2, AR203:2, AR285:2, AR173:2, AR295:2, AR189:2, AR204:2, AR274:2, AR190:2, AR312:2, AR172:2, AR246:2, AR200:2, AR217:2, AR308:2, AR211:2, AR258:2, AR188:2, AR201:2, AR260:2, AR313:2, AR272:2, AR039:2, AR243:1, AR218:1, AR219:1, AR210:1, AR199:1, AR213:1, AR205:1, AR256:1, AR252:1 L0749:4, L0439:3, H0100:2, L0770:2, L0776:2, H0556:1, H0638:1, H0441:1, T0010:1, H0687:1, L0055:1, L0769:1, L0809:1, S0428:1, H0522:1, H0694:1, L0758:1, L0589:1 and L0592:1.
118	HNGOI12	1041375	128	AR229:9, AR299:8, AR300:8, AR198:8, AR060:7, AR185:7, AR245:7, AR271:7, AR182:7, AR176:7, AR053:7, AR180:7, AR316:7, AR247:7, AR240:6, AR173:6, AR274:6, AR055:6, AR266:6, AR181:6, AR257:6, AR175:6, AR179:6, AR183:6, AR233:6, AR252:6, AR239:6, AR204:6, AR282:6, AR177:6, AR104:5, AR174:5, AR309:5, AR264:5, AR269:5, AR228:5, AR243:5, AR197:5, AR207:5, AR312:5, AR226:5, AR275:5, AR192:5, AR219:5, AR196:5, AR270:5, AR212:5, AR293:5, AR237:5, AR238:5, AR253:5, AR236:5, AR218:4, AR268:4, AR262:4, AR261:4, AR267:4, AR234:4, AR246:4, AR201:4, AR283:4, AR258:4, AR191:4, AR296:4, AR171:4, AR254:4, AR213:4, AR272:4, AR230:4, AR308:4, AR255:4, AR231:4, AR235:4, AR289:3, AR199:3, AR061:3, AR291:3, AR297:3, AR286:3, AR288:3, AR205:3, AR222:3, AR263:3, AR227:3, AR193:3, AR200:3, AR214:3, AR290:3, AR033:3, AR294:3, AR203:3, AR256:2, AR295:2, AR285:2, AR232:2, AR287:2, AR189:2, AR195:2, AR224:2, AR225:2, AR216:2, AR188:2, AR311:2, AR260:2, AR190:2, AR242:2, AR210:1, AR172:1, AR170:1, AR211:1 S0052:1
			249	
	HNGOI12	838184	250	
	HNGOI12	839283	250	
119	HNGHUI93	634851	129	AR313:24, AR173:20, AR162:16, AR161:16, AR163:16, AR165:15, AR247:14, AR164:14, AR166:14, AR175:13, AR258:13, AR313:24, AR173:20, AR162:16, AR161:16, AR163:16, AR165:15, AR247:14, AR164:14, AR166:14, AR175:13, AR258:13,

120	HNFHM14	664507	130	AR242:13, AR293:12, AR257:11, AR270:10, AR262:10, AR178:10, AR299:10, AR300:10, AR240:9, AR269:9, AR176:9, AR233:9, AR254:9, AR229:9, AR264:9, AR180:9, AR196:9, AR179:9, AR312:9, AR199:9, AR177:9, AR182:9, AR181:9, AR275:8, AR296:8, AR183:8, AR294:8, AR238:8, AR191:8, AR197:8, AR193:8, AR297:8, AR274:7, AR234:7, AR253:7, AR174:7, AR226:7, AR053:7, AR260:7, AR285:7, AR268:7, AR237:7, AR286:6, AR089:6, AR189:6, AR290:6, AR252:6, AR291:6, AR287:6, AR096:6, AR204:6, AR231:6, AR192:6, AR255:6, AR228:6, AR250:6, AR188:6, AR288:6, AR185:6, AR033:6, AR263:6, AR261:6, AR198:6, AR282:6, AR309:6, AR272:6, AR203:5, AR252:5, AR239:5, AR245:5, AR207:5, AR295:5, AR289:5, AR266:5, AR195:5, AR308:5, AR190:5, AR218:5, AR200:5, AR277:5, AR201:4, AR256:4, AR219:4, AR230:4, AR227:4, AR316:4, AR246:4, AR213:4, AR271:4, AR236:4, AR215:4, AR243:4, AR232:3, AR061:3, AR205:3, AR039:3, AR224:3, AR060:3, AR172:3, AR225:2, AR210:2, AR211:2, AR104:2, AR171:2, AR221:2, AR223:2, AR311:2, AR283:2, AR216:1, AR055:1 S0053:1
121	HNFHB29	895462	131	AR270:26, AR273:17, AR052:17, AR186:12, AR290:12, AR309:11, AR269:10, AR268:9, AR313:8, AR175:7, AR267:7, AR184:6, AR312:6, AR183:5, AR213:5, AR298:5, AR219:5, AR274:4, AR218:4, AR293:4, AR249:4, AR194:4, AR089:4, AR185:4, AR162:3, AR161:3, AR265:3, AR163:3, AR198:3, AR060:3, AR261:3, AR104:3, AR096:3, AR204:3, AR192:3, AR207:3, AR251:3, AR282:3, AR172:3, AR217:3, AR236:3, AR264:3, AR181:3, AR221:3, AR225:2, AR195:2, AR240:2, AR248:2, AR246:2, AR231:2, AR299:2, AR171:2, AR271:2, AR239:2, AR176:2, AR201:2, AR228:2, AR277:2, AR295:2, AR316:2, AR178:2, AR179:2, AR061:2, AR216:2, AR224:2, AR291:2, AR193:2, AR033:2, AR287:2, AR234:2, AR300:1, AR310:1, AR233:1, AR296:1, AR286:1, AR238:1, AR237:1, AR174:1, AR262:1, AR285:1, AR191:1, AR294:1, AR227:1, AR255:1, AR257:1, AR297:1, AR247:1, AR232:1, AR289:1 L0747:5, H0619:4, S0406:4, L0439:4, L0777:4, H0617:2, L0770:2, L0769:2, L0803:2, L0438:2, L3827:2, S0328:2, L0749:2, H0265:1, L3643:1, H0484:1, S0418:1, H0747:1, L3388:1, H0618:1, S0010:1, H0052:1, H0570:1, H0012:1, H0510:1, H0288:1, H0622:1, S0366:1, H0040:1, H0623:1, L0351:1, T0042:1, L0761:1, L0764:1, L0805:1, L0655:1, L0809:1, S0053:1, L3828:1, H0520:1, H0435:1, H0659:1, S3014:1, L0743:1, L0756:1, L0758:1 and H0136:1
122	HNFHOD46	843488	132	AR313:23, AR254:22, AR162:20, AR161:20, AR163:19, AR173:17, AR165:16, AR164:16, AR166:15, AR229:14, AR176:13, AR178:13, AR247:13, AR268:13, AR271:13, AR269:12, AR183:12, AR193:12, AR180:12, AR175:11, AR096:11, AR270:11, AR257:11, AR214:11, AR293:11, AR170:11, AR181:10, AR267:10, AR179:10, AR182:10, AR300:10, AR253:10, AR192:10, AR197:10, AR174:9, AR258:9, AR226:9, AR242:9, AR275:9, AR262:9, AR240:9, AR296:9, AR274:9, AR238:9, AR266:9, AR169:8, AR312:8, AR233:8, AR250:8, AR264:8, AR199:8, AR196:8, AR246:8, AR309:8, AR245:8, AR237:8, AR189:8, AR272:8, AR291:8, AR195:8, AR204:7, AR172:7, AR089:7, AR243:7, AR191:7, AR290:7, AR177:7, AR297:7, AR286:7, AR234:7, AR198:7, AR255:6, AR277:6, AR235:6, AR239:6, AR228:6, AR294:6, AR190:6, AR201:6, AR033:6, AR203:6, AR215:6, AR308:6, AR231:6, AR289:6, AR188:5, AR236:5, AR185:5, AR039:5, AR285:5, AR261:5, AR230:5, AR282:5, AR168:5, AR299:5, AR225:5, AR288:5, AR205:5, AR287:5, AR295:5, AR053:5, AR060:5, AR263:5, AR227:4, AR213:4, AR200:4, AR316:4, AR224:4, AR311:4, AR212:4, AR260:4, AR061:4, AR171:4, AR219:4, AR211:3, AR256:3, AR232:3, AR252:3, AR218:3, AR222:3, AR207:3, AR055:3, AR221:3, AR216:3, AR104:2, AR223:2, AR217:1, AR210:1 S0216:1
				AR039:32, AR313:28, AR096:21, AR089:19, AR299:16, AR185:11, AR277:11, AR316:11, AR300:10, AR104:10, AR060:9, AR219:8, AR218:8, AR240:7, AR055:7, AR161:6, AR162:6, AR173:6, AR282:6, AR163:6, AR165:6, AR164:6, AR166:6, AR183:5, AR247:5, AR270:5, AR229:5, AR176:4, AR175:4, AR181:4, AR269:4, AR257:4, AR179:4, AR238:4, AR283:4,

123	HNTBI26	1310821	133	AR178:4, AR196:4, AR293:4, AR309:4, AR262:4, AR268:4, AR250:4, AR182:4, AR174:3, AR236:3, AR199:3, AR177:3, AR213:3, AR230:3, AR234:3, AR171:3, AR291:3, AR296:3, AR233:3, AR258:3, AR255:3, AR286:3, AR180:3, AR191:3, AR189:3, AR237:3, AR312:3, AR294:3, AR261:3, AR295:3, AR168:3, AR053:3, AR263:3, AR274:3, AR287:2, AR225:2, AR188:2, AR231:2, AR308:2, AR203:2, AR267:2, AR239:2, AR285:2, AR289:2, AR033:2, AR169:2, AR275:2, AR227:2, AR266:2, AR264:2, AR290:2, AR224:2, AR200:2, AR190:2, AR243:2, AR311:2, AR228:2, AR212:2, AR222:2, AR216:2, AR272:1, AR172:1, AR211:1, AR260:1, AR235:1, AR061:1, S0216:1
				AR195:19, AR214:19, AR194:18, AR225:16, AR223:16, AR164:16, AR165:16, AR281:16, AR166:15, AR224:15, AR172:15, AR216:15, AR215:15, AR202:15, AR161:14, AR162:14, AR222:14, AR221:14, AR199:14, AR217:14, AR280:14, AR244:14, AR169:14, AR163:14, AR206:14, AR171:13, AR168:13, AR315:13, AR207:12, AR235:12, AR211:12, AR170:12, AR246:12, AR268:11, AR192:11, AR265:11, AR197:11, AR263:11, AR314:11, AR196:11, AR311:10, AR243:10, AR241:10, AR205:10, AR245:10, AR264:10, AR297:9, AR242:9, AR288:9, AR198:9, AR212:9, AR191:9, AR308:9, AR213:8, AR269:8, AR273:8, AR309:8, AR270:8, AR310:8, AR290:8, AR053:8, AR272:8, AR275:8, AR200:8, AR252:8, AR189:8, AR173:8, AR261:8, AR289:8, AR180:8, AR089:8, AR210:7, AR312:7, AR188:7, AR251:7, AR234:7, AR183:7, AR284:7, AR271:7, AR236:7, AR190:7, AR238:7, AR295:7, AR181:7, AR253:7, AR291:7, AR282:7, AR248:7, AR247:7, AR266:7, AR285:7, AR283:7, AR193:7, AR177:7, AR182:7, AR033:7, AR250:7, AR174:7, AR204:7, AR176:6, AR240:6, AR274:6, AR254:6, AR052:6, AR060:6, AR286:6, AR239:6, AR175:6, AR249:6, AR299:6, AR277:6, AR257:6, AR218:6, AR316:6, AR061:5, AR298:5, AR096:5, AR287:5, AR178:5, AR300:5, AR255:5, AR231:5, AR185:5, AR296:5, AR203:5, AR313:5, AR292:5, AR201:5, AR232:5, AR039:5, AR186:5, AR227:5, AR055:5, AR219:5, AR258:5, AR267:5, AR294:5, AR262:5, AR293:4, AR229:4, AR179:4, AR260:4, AR226:4, AR237:4, AR228:4, AR233:4, AR104:4, AR184:3, AR230:3, AR256:3, AR259:2, H0124:23, L0774:4, L0740:3, S0212:2, S0360:2, L3388:2, L0659:2, L0757:2, S0436:2, H0170:1, H0713:1, H0580:1, S0045:1, H0393:1, S0220:1, H0333:1, H0643:1, H0574:1, H0013:1, S0280:1, H0581:1, H0544:1, H0150:1, H0059:1, H0509:1, L0369:1, L0640:1, L0521:1, L0363:1, L0775:1, L0654:1, L0776:1, L0559:1, L0384:1, L0790:1, L0664:1, L2258:1, L2260:1, H0519:1, S0027:1, S0206:1, L0747:1, L0749:1, L0780:1, L0731:1, L0759:1 and H0542:1.
	HNTBI26	796807	251	
	HNTBI26	590738	252	
124	HNTBL27	545534	134	AR218:6, AR240:5, AR282:5, AR277:5, AR316:5, AR096:4, AR219:4, AR185:4, AR104:4, AR300:3, AR299:3, AR060:3, AR283:3, AR055:3, AR313:3, AR089:3, AR039:3, L0794:3, L0663:2, S0360:1, H0042:1, H0253:1, H0150:1, H0633:1, S0142:1, H0538:1, L0804:1, L0790:1, L0791:1, L0666:1, L0664:1, L0665:1, H0519:1, L0747:1, L0749:1, L0779:1, L0777:1, L0755:1 and L0731:1.
125	HNTCE26	1160395	135	AR291:7, AR164:5, AR295:5, AR296:5, AR285:5, AR166:5, AR165:5, AR170:4, AR297:4, AR287:4, AR162:4, AR286:4, AR161:4, AR235:4, AR311:4, AR257:4, AR288:4, AR223:4, AR225:4, AR053:4, AR089:4, AR060:4, AR308:4, AR261:4, AR169:4, AR262:4, AR176:4, AR096:4, AR264:4, AR266:3, AR283:3, AR199:3, AR246:3, AR178:3, AR289:3, AR214:3, AR267:3, AR205:3, AR269:3, AR312:3, AR245:3, AR263:3, AR195:3, AR196:3, AR175:3, AR255:3, AR293:3, AR236:3, AR270:3, AR277:3, AR173:3, AR104:3, AR272:3, AR188:3, AR183:3, AR294:3, AR268:3, AR224:3, AR258:3, AR242:3, AR182:3, AR238:3, AR189:3, AR193:3, AR316:3, AR191:3, AR180:3, AR174:3, AR163:2, AR197:2, AR233:2, AR210:2, AR290:2, AR200:2, AR190:2, AR203:2, AR217:2, AR247:2, AR181:2, AR299:2, AR185:2, AR260:2, AR211:2, AR282:2,

				AR313:2, AR309:2, AR254:2, AR256:2, AR033:2, AR201:2, AR179:2, AR213:2, AR227:2, AR171:2, AR237:2, AR168:2, AR222:2, AR300:2, AR240:2, AR243:2, AR234:2, AR219:2, AR204:2, AR239:2, AR218:2, AR233:1, AR231:1, AR177:1, AR216:1, AR172:1, AR212:1, AR055:1, AR061:1, AR230:1, AR232:1, AR226:1, H0580:5, L0754:5, H0615:4, L0805:4, L0748:4, L0731:4, H0031:3, S0440:3, L0659:3, L0758:3, L2346:2, S0278:2, L0804:2, L0809:2, H0547:2, H0352:2, H0657:1, H0656:1, S0418:1, S0442:1, S0444:1, L3649:1, H0741:1, H0645:1, H0574:1, H0486:1, L3521:1, H0013:1, S0010:1, H0327:1, H0046:1, L0041:1, H0510:1, S0214:1, H0328:1, H0030:1, H0553:1, H0644:1, H0032:1, S0344:1, S0002:1, L0369:1, L0667:1, L0364:1, L0794:1, L0803:1, L0775:1, L0776:1, L0789:1, L0666:1, L0663:1, L2653:1, L0438:1, H0519:1, H0670:1, H0521:1, L0744:1, L0439:1, L0747:1, L0779:1, L0591:1 and L3374:1.
	HNTCE26	853373	253	
126	HNTNI01	1352285	136	AR207:15, AR263:12, AR169:11, AR311:11, AR212:10, AR198:10, AR264:10, AR235:10, AR252:9, AR168:9, AR223:9, AR224:9, AR089:9, AR053:8, AR215:8, AR172:8, AR161:8, AR162:8, AR214:8, AR222:8, AR163:8, AR309:8, AR165:8, AR205:8, AR192:8, AR164:8, AR170:8, AR221:7, AR166:7, AR216:7, AR242:7, AR282:7, AR308:7, AR195:7, AR171:7, AR039:7, AR213:7, AR261:7, AR312:7, AR245:6, AR254:6, AR295:6, AR225:6, AR033:6, AR197:6, AR288:6, AR217:6, AR060:5, AR196:5, AR274:5, AR096:5, AR246:5, AR291:5, AR193:5, AR216:5, AR286:5, AR277:5, AR283:5, AR299:5, AR178:5, AR272:5, AR275:5, AR236:4, AR243:4, AR285:4, AR240:4, AR104:4, AR313:4, AR185:4, AR176:4, AR296:4, AR297:4, AR204:4, AR287:4, AR210:4, AR055:4, AR177:4, AR253:4, AR183:4, AR181:4, AR290:4, AR247:4, AR269:4, AR258:4, AR289:4, AR257:4, AR201:4, AR174:3, AR238:3, AR200:3, AR262:3, AR300:3, AR175:3, AR199:3, AR294:3, AR255:3, AR188:3, AR268:3, AR180:3, AR293:3, AR211:3, AR173:3, AR266:3, AR250:3, AR270:3, AR061:3, AR189:3, AR179:3, AR267:3, AR239:3, AR182:3, AR190:3, AR227:2, AR231:2, AR234:2, AR256:2, AR219:2, AR237:2, AR203:2, AR191:2, AR229:2, AR226:2, AR230:2, AR32:2, AR260:2, AR233:2, AR218:2, AR228:1, L0747:5, H0545:3, H0520:3, L0439:3, L0803:2, L0790:2, H0547:2, L0740:2, L0751:2, L0779:2, L0759:2, L0593:2, H0170:1, S0005:1, H0485:1, H0013:1, L0564:1, L0770:1, L0794:1, L0809:1, H0519:1, S0378:1, L0756:1, L0777:1 and H0667:1.
	HNTNI01	699848	254	
127	HODDF13	684307	137	AR312:21, AR308:20, AR205:19, AR253:19, AR309:19, AR264:18, AR311:16, AR212:16, AR213:15, AR218:14, AR096:14, AR272:14, AR313:14, AR263:14, AR161:13, AR162:13, AR163:13, AR165:13, AR164:12, AR175:12, AR053:12, AR219:12, AR089:12, AR166:12, AR246:12, AR178:11, AR270:11, AR254:11, AR271:11, AR173:11, AR274:10, AR039:10, AR192:10, AR174:10, AR176:10, AR282:10, AR216:10, AR189:10, AR193:10, AR183:9, AR221:9, AR268:9, AR191:9, AR252:9, AR210:9, AR245:9, AR172:9, AR269:9, AR290:9, AR180:9, AR242:8, AR217:8, AR224:8, AR182:8, AR316:8, AR215:8, AR293:8, AR181:8, AR288:8, AR179:8, AR267:8, AR060:8, AR190:8, AR171:7, AR247:7, AR201:7, AR297:7, AR195:7, AR240:7, AR185:7, AR222:7, AR177:7, AR199:6, AR170:6, AR295:6, AR291:6, AR188:6, AR198:6, AR211:6, AR243:6, AR266:6, AR275:6, AR104:6, AR299:6, AR204:6, AR229:5, AR300:5, AR237:5, AR294:5, AR169:5, AR285:5, AR225:5, AR033:5, AR296:5, AR286:5, AR287:5, AR261:5, AR238:5, AR168:5, AR289:4, AR231:4, AR230:4, AR223:4, AR277:4, AR214:4, AR226:4, AR228:4, AR203:4, AR239:4, AR196:4, AR255:4, AR234:4, AR235:4, AR233:4, AR262:4, AR260:3, AR236:3, AR257:3, AR061:3, AR256:3, AR232:3, AR200:3, AR227:3, AR258:3, AR283:3, AR055:2, AR207:2, H0328:1.
128	HODDN92	422913	138	AR161:4, AR162:4, AR163:4, AR192:4, AR165:4, AR308:4, AR264:4, AR176:4, AR311:3, AR164:3, AR309:3, AR166:3,

129	HOFMQ33	1184465	139	AR312:3, AR213:3, AR214:3, AR193:3, AR225:3, AR313:3, AR096:3, AR089:3, AR270:3, AR172:3, AR235:3, AR299:2, AR201:2, AR291:2, AR104:2, AR269:2, AR195:2, AR294:2, AR169:2, AR215:2, AR290:2, AR224:2, AR173:2, AR060:2, AR288:2, AR282:2, AR285:2, AR271:2, AR185:2, AR275:2, AR271:2, AR211:2, AR268:2, AR316:2, AR190:2, AR267:2, AR274:2, AR171:2, AR272:2, AR287:2, AR212:2, AR237:2, AR189:1, AR289:1, AR300:1, AR247:1, AR255:1, AR262:1, AR257:1, AR183:1, AR286:1, AR236:1, AR256:1, AR293:1, AR254:1, AR295:1, AR178:1, AR297:1, AR238:1, AR296:1, AR168:1, L0758:14, H0457:10, H0556:5, S0114:5, L0748:5, L0756:5, H0657:4, H0620:4, H0328:4, H0591:4, L0754:4, L0779:4, H0589:3, L0532:3, H0445:3, H0341:2, H0580:2, H0208:2, H0619:2, H0486:2, H0013:2, L0471:2, H0024:2, H0673:2, H0674:2, H0038:2, H0264:2, H0561:2, L0803:2, L0606:2, L0519:2, S0216:2, L0749:2, L0777:2, L0589:2, H0171:1, S0218:1, S0212:1, H0255:1, H0305:1, S0358:1, S0444:1, H0329:1, L0717:1, S0222:1, H0370:1, H0438:1, H0586:1, H0574:1, H0632:1, H0581:1, H0310:1, H0544:1, H0009:1, H0123:1, H0350:1, S0003:1, H0252:1, H0615:1, H0644:1, H0598:1, S0036:1, H0090:1, H0063:1, S0038:1, H0625:1, H0538:1, L0373:1, L0794:1, L0650:1, L0774:1, L0805:1, L0559:1, L0558:1, L0659:1, L0526:1, H0144:1, H0520:1, H0696:1, S0206:1, S0434:1, S0011:1, S0026:1, H0543:1 and H0423:1.
				AR205:90, AR212:77, AR245:75, AR274:68, AR272:67, AR216:65, AR246:62, AR252:60, AR308:59, AR213:59, AR214:55, AR312:54, AR215:54, AR197:50, AR309:50, AR254:50, AR053:50, AR217:49, AR171:49, AR221:49, AR195:48, AR311:45, AR225:45, AR223:44, AR264:44, AR170:44, AR189:44, AR199:43, AR210:43, AR263:43, AR168:43, AR247:43, AR243:41, AR224:41, AR172:41, AR253:40, AR222:40, AR169:39, AR164:37, AR250:37, AR174:37, AR271:36, AR166:36, AR198:36, AR165:36, AR201:34, AR188:34, AR162:34, AR190:32, AR242:32, AR161:32, AR204:32, AR193:28, AR173:27, AR192:26, AR313:26, AR236:25, AR291:24, AR177:24, AR275:24, AR290:24, AR256:23, AR039:22, AR262:22, AR096:22, AR191:22, AR240:22, AR219:22, AR200:22, AR185:22, AR179:21, AR218:21, AR089:21, AR211:20, AR300:20, AR288:20, AR175:20, AR297:20, AR289:20, AR295:19, AR255:19, AR261:19, AR299:19, AR203:19, AR207:19, AR293:18, AR196:18, AR268:17, AR237:17, AR296:17, AR258:17, AR282:16, AR316:16, AR285:16, AR231:15, AR269:15, AR257:15, AR178:14, AR234:14, AR287:14, AR181:14, AR230:14, AR033:14, AR260:14, AR267:14, AR061:14, AR233:14, AR239:14, AR183:13, AR266:13, AR270:13, AR229:13, AR286:13, AR277:12, AR180:12, AR060:12, AR238:12, AR226:12, AR232:12, AR176:12, AR227:11, AR294:11, AR228:10, AR283:9, AR235:9, AR182:8, AR104:7, AR055:5 H0415:1
	HOFMQ33	919896	255	
	HOFMQ33	906694	256	
	HOFMQ33	902639	257	
	HOFMQ33	702186	258	
130	HOFQ73	931871	140	AR294:16, AR169:6, AR245:6, AR192:6, AR170:6, AR195:6, AR263:5, AR039:5, AR164:4, AR165:4, AR215:4, AR053:4, AR266:4, AR172:4, AR161:4, AR212:4, AR162:4, AR089:4, AR222:4, AR223:4, AR213:4, AR274:4, AR261:3, AR254:3, AR272:3, AR221:3, AR264:3, AR171:3, AR205:3, AR225:3, AR168:3, AR193:3, AR060:3, AR217:3, AR277:3, AR096:3, AR224:3, AR282:3, AR175:3, AR308:3, AR312:3, AR214:3, AR196:3, AR288:3, AR235:2, AR180:2, AR197:2, AR311:2, AR283:2, AR299:2, AR240:2, AR316:2, AR295:2, AR216:2, AR297:2, AR270:2, AR236:2, AR291:2, AR104:2, AR055:2, AR188:2, AR238:2, AR201:2, AR300:2, AR246:2, AR191:2, AR293:2, AR243:2, AR309:2, AR176:2, AR247:2, AR289:2,

				AR257:2, AR174:2, AR285:2, AR173:2, AR185:2, AR200:2, AR178:2, AR190:2, AR267:2, AR210:2, AR177:2, AR258:2, AR290:2, AR233:2, AR275:2, AR203:2, AR189:2, AR181:1, AR286:1, AR287:1, AR033:1, AR313:1, AR296:1, AR199:1, AR228:1, AR227:1, AR231:1, AR262:1, AR252:1, AR218:1, AR242:1, AR207:1, AR234:1, AR226:1, AR258:1, L0740:8, L0748:7, L0749:7, L0752:4, L0588:4, L0750:3, L0757:3, L0759:3, S0436:3, S0358:2, H0415:2, H0090:2, L0774:2, L0805:2, L0776:2, L0783:2, L0809:2, L0751:2, L0747:2, S0040:1, S0442:1, S0376:1, S0360:1, S0408:1, H0580:1, H0550:1, L0586:1, H0036:1, S0346:1, H0581:1, T0110:1, H0597:1, H0530:1, H0123:1, H0083:1, H0354:1, H0510:1, T0069:1, H0560:1, S0210:1, L0763:1, L0637:1, L0646:1, L0800:1, L0771:1, L0773:1, L0775:1, L0659:1, L0789:1, L0666:1, H0691:1, H0576:1, H0478:1, H0626:1, L0731:1, H0444:1, L0592:1 and S0242:1.
	HOFOC73	907073	259	
	HOFOC73	907072	260	
	HOFOC73	878863	261	
131	HOQB182	1352356	141	AR207:16, AR197:15, AR309:14, AR195:13, AR311:13, AR263:13, AR224:13, AR264:13, AR245:13, AR223:12, AR235:12, AR253:12, AR252:12, AR246:11, AR201:11, AR222:10, AR170:10, AR171:10, AR221:10, AR053:10, AR312:10, AR172:9, AR308:9, AR198:9, AR169:9, AR225:9, AR168:9, AR242:9, AR214:9, AR215:9, AR177:9, AR192:9, AR212:9, AR272:9, AR165:9, AR295:8, AR196:8, AR089:8, AR166:8, AR271:8, AR261:8, AR216:8, AR164:8, AR210:8, AR200:7, AR199:7, AR213:7, AR218:7, AR277:7, AR254:7, AR288:7, AR176:7, AR219:7, AR316:7, AR193:7, AR274:7, AR240:7, AR285:7, AR181:7, AR236:7, AR217:7, AR282:7, AR204:7, AR178:7, AR211:6, AR291:6, AR275:6, AR286:6, AR162:6, AR161:6, AR287:6, AR060:6, AR247:6, AR203:6, AR096:6, AR250:6, AR163:6, AR243:6, AR188:6, AR183:6, AR033:6, AR205:6, AR266:6, AR191:6, AR268:6, AR174:6, AR180:6, AR189:6, AR293:5, AR229:5, AR104:5, AR175:5, AR289:5, AR055:5, AR270:5, AR299:5, AR297:5, AR296:5, AR039:5, AR313:5, AR300:5, AR231:5, AR262:5, AR234:5, AR290:5, AR267:5, AR257:5, AR239:5, AR233:4, AR226:4, AR238:4, AR237:4, AR269:4, AR258:4, AR173:4, AR185:4, AR228:4, AR294:4, AR283:4, AR182:4, AR230:4, AR061:4, AR255:4, AR190:4, AR232:4, AR179:4, AR256:4, AR260:4, AR227:3, L0766:12, L0758:7, H0616:4, L0439:4, L0754:4, L0747:4, L0779:4, L0777:4, L0601:4, H0657:3, H0656:3, H0081:3, H0031:3, H0038:3, S0222:2, H0455:2, H0618:2, H0617:2, T0042:2, H0494:2, S0210:2, H0529:2, L0769:2, L0662:2, L0794:2, L0665:2, H0445:2, H0543:2, H0170:1, H0394:1, H0556:1, T0002:1, S0029:1, H0662:1, S0358:1, S0045:1, S0046:1, S0140:1, L0717:1, H0370:1, H0392:1, H0497:1, H0574:1, H0253:1, H0318:1, H0597:1, H0544:1, H0545:1, H0178:1, L0157:1, L0471:1, S0050:1, H0014:1, H0051:1, T0010:1, H0408:1, H0266:1, H0188:1, H0290:1, S0022:1, H0135:1, H0090:1, H0040:1, H0634:1, H0264:1, S0448:1, H0641:1, S0142:1, S0344:1, L0770:1, L0637:1, L0645:1, L0771:1, L0521:1, L0768:1, L0803:1, L0806:1, L0805:1, L0652:1, L0653:1, L0776:1, L0655:1, L0629:1, L0659:1, L0789:1, L0791:1, L0663:1, L0664:1, H0519:1, H0682:1, H0539:1, H0521:1, H0522:1, H0134:1, H0214:1, L0749:1, L0750:1, H0667:1, H0542:1, H0423:1 and H0422:1.
	HOQB182	858338	262	
	HOQB182	857453	263	
132	HOSBY40	589431	142	AR197:6, AR309:6, AR250:5, AR176:5, AR245:4, AR169:4, AR161:4, AR162:4, AR277:4, AR163:4, AR201:4, AR282:4, AR253:4, AR198:4, AR177:4, AR229:3, AR272:3, AR181:3, AR089:3, AR299:3, AR193:3, AR264:3, AR269:3, AR239:3, AR190:3, AR189:3, AR246:3, AR233:3, AR237:3, AR195:3, AR257:3, AR238:3, AR300:3, AR313:3, AR165:3, AR270:3,

133	HOSD125	854234	143	AR172:3, AR166:3, AR271:3, AR275:3, AR255:3, AR240:3, AR207:2, AR274:2, AR216:2, AR228:2, AR312:2, AR215:2, AR183:2, AR196:2, AR226:2, AR311:2, AR096:2, AR203:2, AR262:2, AR191:2, AR247:2, AR060:2, AR268:2, AR316:2, AR199:2, AR188:2, AR243:2, AR205:2, AR261:2, AR231:2, AR178:2, AR180:2, AR227:2, AR223:2, AR263:2, AR232:2, AR266:2, AR222:2, AR061:2, AR164:2, AR258:2, AR217:1, AR200:1, AR224:1, AR224:1, AR283:1, AR182:1, AR267:1, AR171:1, AR185:1, AR234:1, AR192:1, AR297:1, AR170:1, S0418:1, H0393:1, S0003:1, L0766:1, L0804:1 and S0052:1.
				AR207:16, AR263:14, AR235:13, AR224:13, AR225:13, AR309:12, AR196:12, AR311:12, AR214:12, AR223:12, AR172:12, AR246:11, AR168:11, AR217:11, AR264:11, AR171:11, AR215:11, AR170:11, AR291:10, AR221:10, AR222:10, AR295:10, AR288:10, AR195:10, AR039:10, AR277:10, AR192:10, AR197:10, AR161:10, AR162:10, AR261:9, AR216:9, AR163:9, AR165:9, AR205:9, AR210:9, AR236:9, AR177:9, AR198:9, AR164:9, AR089:9, AR191:9, AR245:9, AR201:9, AR242:9, AR212:9, AR166:8, AR188:8, AR285:8, AR240:8, AR174:8, AR252:8, AR290:8, AR271:8, AR250:8, AR260:8, AR176:8, AR219:8, AR282:8, AR200:8, AR312:8, AR316:8, AR253:8, AR181:8, AR297:7, AR060:7, AR308:7, AR096:7, AR199:7, AR289:7, AR286:7, AR287:7, AR293:7, AR213:7, AR262:7, AR313:7, AR180:7, AR300:7, AR269:7, AR257:7, AR193:7, AR231:6, AR275:6, AR296:6, AR258:6, AR255:6, AR175:6, AR218:6, AR190:6, AR053:6, AR266:6, AR178:6, AR270:6, AR268:6, AR233:6, AR243:6, AR182:6, AR189:6, AR294:6, AR104:6, AR185:6, AR239:6, AR173:5, AR179:5, AR204:5, AR272:5, AR256:5, AR299:5, AR274:5, AR247:5, AR033:5, AR183:5, AR211:5, AR229:5, AR267:5, AR234:5, AR237:5, AR055:5, AR238:4, AR228:4, AR230:4, AR203:4, AR061:4, AR283:4, AR232:4, AR226:4, AR227:3, AR254:3, L0754:4, L0749:4, L0659:3, L0755:3, S0356:2, L0803:2, L0750:2, L0779:2, L0599:2, S0029:1, H0661:1, S0354:1, H0642:1, T0040:1, L0021:1, H0599:1, H0510:1, S0003:1, H0674:1, H0316:1, H0623:1, S0422:1, L0794:1, L0522:1, L0774:1, L0526:1, L0809:1, H0520:1, H0659:1, H0670:1, L0752:1, L0608:1 and S0242:1.
134	HOSD125 HPEAD79	566845 520202	264 144	AR277:24, AR176:5, AR039:5, AR162:5, AR205:5, AR161:5, AR235:5, AR163:5, AR282:5, AR309:5, AR168:4, AR223:4, AR228:4, AR181:4, AR266:4, AR182:4, AR269:4, AR229:4, AR257:3, AR233:3, AR272:3, AR178:3, AR180:3, AR165:3, AR264:3, AR261:3, AR268:3, AR195:3, AR164:3, AR275:3, AR166:3, AR267:3, AR183:3, AR196:3, AR238:3, AR237:3, AR236:3, AR316:3, AR171:3, AR170:3, AR179:3, AR245:3, AR060:3, AR262:3, AR193:3, AR177:3, AR255:3, AR242:3, AR289:3, AR201:3, AR230:3, AR311:3, AR254:3, AR215:2, AR290:2, AR294:2, AR204:2, AR216:2, AR231:2, AR287:2, AR299:2, AR288:2, AR227:2, AR300:2, AR033:2, AR089:2, AR191:2, AR239:2, AR173:2, AR271:2, AR225:2, AR270:2, AR295:2, AR293:2, AR296:2, AR234:2, AR185:2, AR285:2, AR214:2, AR226:2, AR274:2, AR190:2, AR203:2, AR096:2, AR199:2, AR189:2, AR247:2, AR297:2, AR200:2, AR217:2, AR246:2, AR055:2, AR175:2, AR211:2, AR232:2, AR061:2, AR283:2, AR286:2, AR053:1, AR222:1, AR263:1, AR256:1, AR260:1, AR258:1, AR210:1, AR291:1, AR188:1, AR174:1, AR312:1, AR252:1, AR224:1, AR219:1 H0165:1
135	HPBO15	1310868	145	AR240:10, AR211:10, AR178:9, AR270:8, AR221:8, AR295:7, AR235:7, AR161:7, AR162:7, AR189:7, AR163:7, AR288:7, AR255:6, AR191:6, AR175:6, AR293:6, AR096:6, AR183:6, AR182:6, AR188:6, AR269:5, AR236:5, AR190:5, AR173:5, AR180:5, AR165:5, AR174:5, AR290:5, AR164:5, AR274:5, AR166:5, AR060:5, AR261:5, AR179:5, AR203:5, AR195:5, AR222:5, AR055:4, AR193:4, AR181:4, AR297:4, AR291:4, AR171:4, AR197:4, AR168:4, AR289:4, AR266:4, AR268:4, AR296:4, AR262:4, AR287:4, AR104:4, AR196:4, AR267:4, AR177:4, AR299:4, AR176:4, AR033:4, AR246:4,

				AR172:4, AR225:3, AR263:3, AR286:3, AR275:3, AR170:3, AR316:3, AR294:3, AR285:3, AR308:3, AR228:3, AR300:3, AR282:3, AR089:3, AR257:3, AR277:3, AR214:3, AR238:3, AR224:3, AR245:3, AR233:3, AR272:3, AR201:3, AR254:3, AR309:3, AR311:3, AR243:3, AR264:3, AR212:3, AR215:3, AR185:3, AR312:3, AR260:3, AR213:3, AR313:3, AR053:2, AR256:2, AR200:2, AR237:2, AR231:2, AR283:2, AR229:2, AR061:2, AR239:2, AR216:2, AR227:2, AR232:2, AR226:2, AR258:2, AR234:2, AR230:2, AR271:2, AR199:2, AR039:1, AR223:1, L0747:8, L0749:5, L0755:5, H0013:3, L0769:3, L0731:3, S0212:2, L0770:2, L0803:2, H0144:2, L0756:2, H0624:1, H0171:1, S0282:1, H0776:1, H0592:1, H0427:1, H0575:1, H0041:1, H0124:1, H0163:1, H0038:1, L0637:1, L0774:1, L0775:1, L0791:1, H0648:1, H0756:1, S0028:1, L0439:1, L0777:1 and S0436:1.
	HP/BO15	590741	265	
136	HP/BI33	685699	146	AR161:12, AR162:12, AR163:12, AR313:8, AR165:8, AR229:8, AR164:8, AR166:7, AR275:6, AR247:6, AR180:5, AR264:5, AR270:5, AR173:5, AR233:5, AR237:5, AR174:5, AR274:5, AR176:5, AR181:5, AR177:5, AR246:5, AR240:5, AR312:4, AR263:4, AR234:4, AR309:4, AR183:4, AR096:4, AR179:4, AR185:4, AR182:4, AR238:4, AR269:4, AR178:4, AR282:4, AR293:4, AR272:3, AR231:3, AR296:3, AR268:3, AR196:3, AR230:3, AR104:3, AR226:3, AR170:3, AR089:3, AR300:3, AR228:3, AR261:3, AR175:3, AR297:3, AR236:2, AR217:2, AR291:2, AR311:2, AR169:2, AR316:2, AR255:2, AR033:2, AR295:2, AR294:2, AR191:2, AR267:2, AR168:2, AR171:2, AR277:2, AR286:2, AR290:2, AR262:2, AR199:2, AR227:2, AR189:2, AR239:2, AR203:2, AR257:2, AR285:2, AR223:2, AR299:2, AR266:2, AR060:2, AR287:2, AR214:2, AR190:1, AR200:1, AR061:1, AR308:1, AR216:1, AR213:1, AR224:1, AR195:1, AR289:1, AR055:1, S0152:1
137	HP/BK12	1011467	147	AR215:5, AR197:4, AR039:4, AR309:4, AR245:4, AR161:3, AR162:3, AR204:3, AR165:3, AR225:3, AR169:3, AR264:3, AR282:3, AR272:3, AR089:3, AR180:3, AR213:3, AR172:3, AR253:2, AR166:2, AR212:2, AR193:2, AR252:2, AR271:2, AR312:2, AR275:2, AR164:2, AR060:2, AR240:2, AR216:2, AR266:2, AR201:2, AR205:2, AR183:2, AR176:2, AR195:2, AR223:2, AR283:2, AR277:1, AR311:1, AR247:1, AR313:1, AR242:1, AR199:1, AR299:1, AR316:1, AR188:1, AR104:1, AR168:1, AR185:1, AR291:1, AR287:1, AR231:1, AR294:1, AR230:1, AR096:1, S0152:2
	HP/BK12	525375	266	
	HP/BK12	796925	267	
	HP/BK12	699587	268	
138	HP/MDK28	846357	148	AR055:9, AR089:9, AR218:7, AR060:7, AR104:7, AR219:7, AR299:6, AR096:6, AR185:5, AR316:4, AR313:4, AR180:4, AR039:4, AR282:4, AR283:3, AR198:3, AR169:3, AR165:3, AR235:3, AR242:2, AR207:2, AR300:2, AR217:2, AR223:2, AR277:2, AR286:2, AR270:2, AR224:2, AR263:2, AR163:2, AR161:2, AR240:2, AR166:2, AR289:2, AR272:1, AR164:1, AR172:1, AR261:1, AR252:1, AR269:1, AR295:1, AR170:1, AR297:1, AR177:1, S0358:5, L0809:4, L0742:4, L0743:4, L0590:4, H0543:4, S0360:3, H0031:3, S0422:3, L0763:3, L0764:3, L0766:3, L0754:3, H0716:2, H0333:2, H0266:2, H0617:2, L4497:2, L0769:2, L0776:2, H0658:2, H0696:2, L0748:2, L0749:2, H0445:2, S0434:2, S0110:1, H0663:1, L0481:1, H0730:1, H0747:1, H0411:1, H0431:1, H0370:1, H0574:1, H0632:1, L2490:1, H0253:1, H0052:1, H0546:1, H0545:1, H0150:1, H0123:1, H0012:1, S0050:1, S0051:1, H0188:1, H0428:1, T0006:1, H0606:1, H0673:1, H0090:1, H0040:1, H0412:1, T0069:1, S0112:1, S0344:1, H0538:1, H0529:1, L0770:1, L0761:1, L0662:1, L0768:1, L0794:1, L0560:1, L0775:1, L0806:1, L0517:1, L0540:1, L0384:1, L5622:1, L0666:1, L0665:1, L2260:1, L2654:1, S0374:1, H0684:1, L3832:1, S0004:1, S0390:1,

				S3014:1, L0439:1, L0740:1, L0747:1, L0756:1, L0779:1, S0436:1, L0480:1, L0596:1, S0026:1, S0276:1, S0196:1, L2854:1 and L3612:1.
	HPMDK28	639118	269	AR104:11, AR089:10, AR060:9, AR283:7, AR039:6, AR055:6, AR316:6, AR096:6, AR219:6, AR263:5, AR299:5, AR218:5, AR313:5, AR185:5, AR240:5, AR282:5, AR206:3, AR300:2, AR312:2, AR291:2, AR251:2, AR246:2, AR052:2, AR184:2, AR202:2, AR290:2, AR232:2, AR295:2, AR238:2, AR237:2, AR298:2, AR270:2, AR309:2, AR292:2, AR268:2, AR285:1, AR177:1, AR310:1, AR182:1, AR213:1, AR226:1, AR053:1, AR186:1, AR175:1, AR289:1, AR205:1, AR183:1, AR233:1, AR294:1, AR284:1, AR229:1, H0694:5, L0759:5, L0766:4, H0261:3, S0222:3, H0486:3, H0052:3, L0731:3, L3316:2, H0252:2, L0764:2, L0662:2, L0775:2, L0657:2, L0659:2, L0530:2, L0666:2, L0748:2, L0439:2, L0750:2, L0588:2, L0594:2, H0224:1, H0717:1, H0656:1, S0001:1, S0360:1, S0408:1, H0729:1, S0045:1, H0619:1, L3388:1, H0592:1, H0587:1, H0333:1, S0474:1, H0014:1, L0163:1, H0051:1, H0355:1, T0006:1, H0644:1, H0032:1, H0212:1, L0456:1, H0124:1, H0708:1, S0036:1, H0038:1, H0616:1, H0087:1, H0059:1, H0280:1, S0440:1, S0150:1, H0633:1, L0369:1, L0763:1, L0769:1, L0638:1, L0637:1, L5566:1, L0761:1, L0772:1, L0648:1, L0803:1, L0650:1, L0805:1, L0809:1, L0647:1, L0665:1, H0539:1, H0521:1, H0696:1, H0555:1, L0754:1, L0749:1, L0753:1, L0755:1, L0757:1, L0605:1, L0599:1 and L3352:1.
	HPRAL78	844216	270	
	HPRAL78	484735	271	
140	HRABA80	882176	150	AR060:929, AR104:796, AR089:725, AR055:678, AR299:627, AR283:625, AR282:494, AR185:464, AR096:462, AR316:387, AR039:363, AR240:317, AR277:285, AR300:278, AR218:153, AR313:152, AR219:140, AR242:4, AR221:3, AR217:2, AR291:2, AR172:2, AR205:2, AR163:2, AR165:2, AR178:2, AR161:2, AR168:2, AR166:2, AR164:1, AR171:1, AR195:1, AR268:1, AR180:1, AR266:1, AR215:1, AR234:1, AR230:1, AR257:1, AR199:1, AR270:1, AR179:1, H0555:1
	HRABA80	588460	272	
141	HRACD15	871221	151	AR193:12, AR165:11, AR164:11, AR166:10, AR299:10, AR313:9, AR162:9, AR161:9, AR246:9, AR163:9, AR205:9, AR312:9, AR311:9, AR089:8, AR243:8, AR245:8, AR096:8, AR195:8, AR242:7, AR176:7, AR270:7, AR291:7, AR212:7, AR297:7, AR264:7, AR288:7, AR199:7, AR197:7, AR282:7, AR300:6, AR240:6, AR272:6, AR196:6, AR285:6, AR275:6, AR201:6, AR200:6, AR263:6, AR213:6, AR229:6, AR221:6, AR225:6, AR183:6, AR266:6, AR268:5, AR293:5, AR283:5, AR255:5, AR104:5, AR247:5, AR274:5, AR308:5, AR180:5, AR262:5, AR295:5, AR236:5, AR316:5, AR254:5, AR053:5, AR191:5, AR215:5, AR287:5, AR277:5, AR203:5, AR238:5, AR188:5, AR223:5, AR039:5, AR235:5, AR269:4, AR261:4, AR189:4, AR309:4, AR289:4, AR060:4, AR258:4, AR182:4, AR175:4, AR294:4, AR210:4, AR185:4, AR286:4, AR174:4, AR178:4, AR198:4, AR192:4, AR257:4, AR177:4, AR190:4, AR290:4, AR173:4, AR179:4, AR033:4, AR296:3, AR214:3, AR217:3, AR181:3, AR267:3, AR170:3, AR256:3, AR231:3, AR224:3, AR233:3, AR234:3, AR230:3, AR239:3, AR260:3, AR237:3, AR252:3, AR250:3, AR216:3, AR204:2, AR226:2, AR227:2, AR232:2, AR061:2, AR228:2, AR211:2, AR171:2, AR222:2, AR172:2, AR168:2, AR055:2, AR207:1, AR218:1, H0556:15, H0265:8, L0751:8, H0617:7, L0662:7, L0766:5, L0809:5, H0040:4, H0494:4, S0142:4, L0769:4, H0555:4, L0750:4, H0543:4, H0341:3, L0534:3, H0486:3, L0649:3, L0666:3, H0658:3, L0749:3, L0758:3, H0624:2, S0040:2, L0415:2, H0261:2, H0549:2, H0550:2, H0618:2, H0052:2, S0150:2, L0805:2, L0807:2, L0657:2, L0790:2, H0539:2, S0380:2, L0748:2, L0747:2, L0731:2, L0759:2, S0434:2, H0685:1, S0114:1,

				H0583:1, H0483:1, H0255:1, H0305:1, H0589:1, H0125:1, L0539:1, S0444:1, S0360:1, H0729:1, H0619:1, S0278:1, H0392:1, H0592:1, L3817:1, H0485:1, H0635:1, S0280:1, H0599:1, H0042:1, H0194:1, H0546:1, H0046:1, H0571:1, H0050:1, H0620:1, H0024:1, H0594:1, H0266:1, H0416:1, H0188:1, H0290:1, H0213:1, H0031:1, H0644:1, H0628:1, H0606:1, H0166:1, H0169:1, H0124:1, S0366:1, H0598:1, H0135:1, H0038:1, H0616:1, H0087:1, H0100:1, H0429:1, S0016:1, H0561:1, H0132:1, H0646:1, S0422:1, L0598:1, H0529:1, L0763:1, L0638:1, L4747:1, L0761:1, L0800:1, L0648:1, L0774:1, L0651:1, L0378:1, L0776:1, L0629:1, L0382:1, L0788:1, L0791:1, L0663:1, H0144:1, H0593:1, H0689:1, H0659:1, S0406:1, S0037:1, L0745:1, L0779:1, L0752:1, L0755:1, S0394:1, L0593:1, S0026:1, H0665:1, H0542:1, H0423:1 and H0506:1.
	HRACD15	706332	273	
142	HRACI35	877666	152	AR222:51, AR224:51, AR221:28, AR223:24, AR225:20, AR172:14, AR171:9, AR170:9, AR182:9, AR215:9, AR214:9, AR183:8, AR216:8, AR169:8, AR168:7, AR268:7, AR217:7, AR180:7, AR176:5, AR269:5, AR173:5, AR266:5, AR175:4, AR270:4, AR165:4, AR164:4, AR181:4, AR166:4, AR290:4, AR163:4, AR238:4, AR096:4, AR161:4, AR162:4, AR195:3, AR267:3, AR274:3, AR291:3, AR243:3, AR250:3, AR289:3, AR179:3, AR316:3, AR230:3, AR247:3, AR282:3, AR060:3, AR257:3, AR240:2, AR104:2, AR246:2, AR196:2, AR255:2, AR177:2, AR300:2, AR228:2, AR288:2, AR231:2, AR237:2, AR272:2, AR174:2, AR192:2, AR178:2, AR297:2, AR191:2, AR229:2, AR226:2, AR205:2, AR061:2, AR185:2, AR190:2, AR189:2, AR263:2, AR294:2, AR203:2, AR233:2, AR210:2, AR275:2, AR287:1, AR089:1, AR283:1, AR234:1, AR033:1, AR311:1, AR213:1, AR055:1, AR293:1, AR227:1, AR201:1, AR312:1, AR200:1, AR039:1, AR188:1, AR239:1, AR296:1, AR193:1, L0731:1, L0803:7, L0748:7, L0517:6, L0809:6, L0749:6, L0439:5, S0410:4, S0002:4, L0770:4, L0794:4, L0805:4, L3212:4, S0436:4, L3388:3, H0553:3, L0506:3, L0747:3, L0752:3, H0713:2, H0661:2, H0244:2, H0156:2, H0644:2, L0662:2, L0775:2, L0666:2, L0438:2, H0521:2, L0757:2, L0758:2, L0759:2, H0171:1, S0040:1, H0650:1, S0212:1, S0358:1, S0444:1, S0360:1, H0580:1, H0722:1, H0208:1, H0619:1, H0441:1, H0537:1, H0497:1, H0333:1, H0632:1, T0060:1, H0013:1, H0427:1, S0346:1, H0052:1, H0231:1, H0166:1, S0364:1, L0455:1, H0163:1, H0040:1, S0015:1, H0745:1, H0509:1, H0652:1, S0210:1, S0426:1, L0796:1, L0766:1, L0804:1, L0774:1, L0776:1, L0659:1, L0526:1, L0783:1, L0529:1, L0647:1, L0665:1, H0144:1, H0696:1, H0555:1, L0611:1, S0028:1, S0206:1, L0751:1, L0745:1, S0260:1, L0599:1, H0668:1, L0698:1 and S0460:1.
	HRACI35	730504	274	
	HRACI35	470546	275	
143	HRGBL78	910133	153	AR052:15, AR213:14, AR053:10, AR244:8, AR096:7, AR184:6, AR215:6, AR310:5, AR251:5, AR241:5, AR221:4, AR273:4, AR170:4, AR270:3, AR206:3, AR249:3, AR186:3, AR284:3, AR312:3, AR290:3, AR292:3, AR168:3, AR039:3, AR266:3, AR055:3, AR298:3, AR281:3, AR172:3, AR198:3, AR281:3, AR202:3, AR289:2, AR205:2, AR269:2, AR313:2, AR293:2, AR295:2, AR061:2, AR253:2, AR183:2, AR316:2, AR182:2, AR265:2, AR267:2, AR277:2, AR285:2, AR195:2, AR268:2, AR238:2, AR299:2, AR259:2, AR296:2, AR286:2, AR300:2, AR309:2, AR291:2, AR171:2, AR212:2, AR060:2, AR274:2, AR169:2, AR246:2, AR033:2, AR229:2, AR175:2, AR223:2, AR181:2, AR294:2, AR226:1, AR247:1, AR232:1, AR275:1, AR217:1, AR089:1, AR180:1, AR240:1, AR192:1, AR210:1, AR263:1, AR185:1, AR164:1, AR166:1, AR258:1, AR201:1, AR257:1, AR104:1, AR163:1, AR177:1, AR243:1, L0740:25, L0766:5, L0655:4, H0650:2, H0657:2, H0656:2, H0402:2, H0581:2, L0761:2, L0794:2, H0306:1, S0408:1, H0318:1, H0046:1, H0266:1, S0038:1, H0429:1, H0560:1, S0344:1, L0789:1, S0053:1, H0689:1, H0134:1, L0779:1, L0777:1 and H0445:1.

	HRGBL78	904040	276	
	HRGBL78	904621	277	
	HRGBL78	863802	278	
144	HROAJ39	1181699	154	AR055:8, AR060:6, AR218:6, AR300:5, AR316:4, AR089:4, AR240:4, AR282:3, AR185:3, AR104:3, AR299:3, AR313:3, AR096:3, AR283:3, AR039:2, AR219:2, AR277:2, H0316:1, L3905:1, L0565:1, L0438:1, H0521:1, L0439:1 and L0594:1.
	HROAI39	1114849	279	
	HROAI39	1027712	280	
145	HROBD68	827306	155	AR196:23, AR161:12, AR162:12, AR163:11, AR313:11, AR242:9, AR165:8, AR164:8, AR166:8, AR191:8, AR089:8, AR275:8, AR096:7, AR181:7, AR175:7, AR053:7, AR299:6, AR173:6, AR264:6, AR060:6, AR258:5, AR236:5, AR257:5, AR198:5, AR312:5, AR177:5, AR263:5, AR185:5, AR180:5, AR274:5, AR293:5, AR174:5, AR179:5, AR200:5, AR270:5, AR225:5, AR250:5, AR269:5, AR178:5, AR300:5, AR282:5, AR195:5, AR199:5, AR247:5, AR309:5, AR188:4, AR316:4, AR203:4, AR183:4, AR189:4, AR238:4, AR287:4, AR285:4, AR294:4, AR308:4, AR104:4, AR240:4, AR226:4, AR261:4, AR182:4, AR311:4, AR229:4, AR277:4, AR271:4, AR295:4, AR207:4, AR255:4, AR262:4, AR176:4, AR235:4, AR268:4, AR291:4, AR297:4, AR213:3, AR233:3, AR231:3, AR296:3, AR286:3, AR288:3, AR212:3, AR290:3, AR234:3, AR237:3, AR169:3, AR266:3, AR219:3, AR272:3, AR190:3, AR254:3, AR260:3, AR267:3, AR193:3, AR230:3, AR239:3, AR216:3, AR228:2, AR211:2, AR218:2, AR201:2, AR171:2, AR246:2, AR227:2, AR205:2, AR033:2, AR055:2, AR289:2, AR283:2, AR172:1, AR204:1, AR214:1, AR215:1, AR256:1, AR061:1, AR168:1, AR197:1, AR170:1, AR192:1, L0509:9, L0766:4, L0515:2, L0783:2, S0342:1, S0114:1, S0218:1, H0589:1, H0645:1, H0592:1, H0250:1, H0581:1, H0057:1, H0252:1, H0328:1, H0674:1, H0598:1, H0090:1, H0634:1, H0488:1, H0625:1, S0426:1, L0506:1, L0667:1, L0499:1, L0803:1, L0493:1, L0514:1, L0511:1, L0809:1, S0052:1, S0428:1, H0683:1, S0152:1, S0136:1, L0748:1, L0751:1, L0759:1, L0599:1 and H0543:1.
146	HSABWD74	460527	156	AR039:35, AR313:32, AR096:24, AR089:22, AR299:17, AR300:16, AR104:13, AR185:13, AR277:13, AR316:13, AR060:13, AR173:12, AR165:12, AR166:12, AR240:11, AR164:11, AR218:11, AR162:11, AR161:11, AR163:10, AR229:10, AR178:9, AR242:9, AR175:9, AR262:9, AR247:9, AR183:9, AR258:8, AR275:8, AR055:8, AR257:8, AR180:7, AR293:7, AR282:7, AR181:7, AR196:7, AR204:7, AR312:7, AR219:7, AR193:7, AR191:6, AR238:6, AR176:6, AR198:6, AR269:6, AR235:6, AR199:6, AR179:6, AR270:6, AR233:6, AR182:6, AR297:6, AR234:6, AR254:6, AR177:6, AR296:6, AR174:6, AR236:5, AR203:5, AR226:5, AR283:5, AR266:5, AR285:5, AR268:5, AR245:5, AR255:5, AR188:5, AR309:5, AR267:5, AR053:5, AR287:5, AR294:5, AR213:5, AR274:5, AR286:5, AR200:5, AR231:4, AR308:4, AR033:4, AR288:4, AR189:4, AR237:4, AR260:4, AR261:4, AR291:4, AR201:4, AR172:4, AR243:4, AR295:4, AR228:4, AR290:4, AR271:4, AR212:4, AR264:4, AR272:3, AR252:3, AR169:3, AR230:3, AR239:3, AR205:3, AR253:3, AR227:3, AR197:3, AR289:3, AR225:3, AR207:3, AR190:3, AR217:2, AR214:2, AR061:2, AR216:2, AR256:2, AR32:2, AR263:2, AR195:2, AR223:2, AR221:2, AR246:2, AR311:1, AR192:1, AR168:1, AR210:1, AR211:1, H0068:3, S0114:2, L0534:2, L0740:2, H0717:1, S0134:1, S0442:1, S0354:1, S0476:1, H0333:1, H0009:1, H0560:1, L5565:1 and H0576:1.
	HSABWD74	371416	281	
147	HSDEK49	1352253	157	AR290:45, AR268:37, AR240:23, AR267:22, AR269:16, AR270:14, AR234:10, AR055:10, AR238:10, AR184:9, AR292:8,

				AR291:8, AR179:8, AR183:8, AR284:7, AR177:7, AR182:6, AR060:6, AR299:5, AR295:5, AR285:5, AR244:5, AR293:5, AR175:5, AR096:4, AR185:3, AR229:3, AR249:3, AR296:3, AR316:3, AR231:3, AR298:3, AR289:3, AR104:3, AR237:3, AR286:2, AR089:2, AR226:2, AR204:2, AR282:2, AR294:2, AR227:2, AR313:2, AR247:2, AR300:2, AR233:2, AR248:2, AR259:2, AR275:2, AR256:2, AR039:1, AR033:1, AR277:1, AR263:1, AR061:1, AR258:1, AR232:1, AR271:1, AR283:1, AR310:1, H0031:7, L0439:7, L0754:7, L3388:6, L0731:6, S0002:5, H0580:4, H0575:3, H0309:3, L0438:3, H0555:3, L0758:3, S0360:2, L3649:2, H0553:2, S0344:2, S0426:2, L0775:2, S0330:2, L0747:2, L0779:2, S0260:2, L0599:2, L0603:2, H0739:1, H0170:1, S0116:1, S0354:1, S0444:1, L3645:1, H0270:1, S0280:1, H0590:1, H0581:1, H0251:1, H0014:1, H0355:1, H0030:1, H0644:1, H0674:1, H0090:1, H0063:1, S0142:1, L0770:1, L0769:1, L0651:1, L0776:1, L0659:1, L0519:1, L0664:1, H0682:1, L0749:1, L0752:1, S0031:1 and H0506:1.
	HSDEK49	625998	282	
148	HSDFJ26	834619	158	AR263:62, AR264:49, AR269:11, AR161:9, AR162:9, AR163:9, AR176:8, AR181:6, AR309:6, AR182:6, AR191:6, AR235:6, AR266:6, AR223:5, AR215:5, AR267:5, AR180:5, AR268:5, AR178:5, AR311:5, AR228:5, AR282:5, AR183:5, AR165:4, AR174:4, AR096:4, AR177:4, AR164:4, AR236:4, AR270:4, AR214:4, AR233:4, AR179:4, AR190:4, AR166:4, AR237:4, AR308:4, AR255:3, AR055:3, AR189:3, AR168:3, AR216:3, AR175:3, AR294:3, AR217:3, AR239:3, AR231:3, AR172:3, AR207:3, AR275:3, AR238:3, AR240:3, AR229:3, AR316:3, AR222:3, AR170:3, AR272:3, AR225:3, AR247:3, AR061:3, AR226:3, AR060:3, AR274:3, AR232:3, AR199:3, AR291:3, AR260:3, AR234:2, AR230:2, AR288:2, AR312:2, AR262:2, AR290:2, AR203:2, AR053:2, AR227:2, AR287:2, AR104:2, AR289:2, AR285:2, AR185:2, AR313:2, AR295:2, AR257:2, AR200:2, AR188:2, AR293:2, AR252:2, AR193:2, AR256:2, AR261:2, AR196:2, AR089:2, AR300:2, AR283:1, AR219:1, AR201:1, AR271:1, AR171:1, AR224:1, AR286:1, AR033:1, AR211:1, AR297:1, AR258:1, AR277:1, S0026:6, S0360:4, L0662:4, L0747:4, L0759:4, L0755:3, S0408:2, H0575:2, S0474:2, H0251:2, H0673:2, L0766:2, L0804:2, L0665:2, L0608:2, H0543:2, H0171:1, H0686:1, H0613:1, H0427:1, L0021:1, T0082:1, H0309:1, H0150:1, H0024:1, L0163:1, H0266:1, H0271:1, S0338:1, H0252:1, H0615:1, H0428:1, H0030:1, H0040:1, H0647:1, L0369:1, L0500:1, L0769:1, L0638:1, L0637:1, L0764:1, L0767:1, L0768:1, L0364:1, L0794:1, L0649:1, L0775:1, L0805:1, L0659:1, L0382:1, L0666:1, S0052:1, H0697:1, S0328:1, S0330:1, S0380:1, H0521:1, S0406:1, H0478:1, L0754:1, L0745:1, L0749:1, L0779:1, L0780:1, L0752:1, S0031:1, L0601:1, S0242:1 and H0542:1.
	HSDFJ26	836071	283	
149	HSDSB09	1301498	159	AR060:10, AR089:9, AR055:7, AR104:7, AR313:5, AR039:4, AR218:4, AR299:4, AR184:4, AR316:4, AR096:4, AR182:4, AR219:3, AR294:3, AR185:3, AR214:3, AR197:3, AR291:3, AR212:3, AR251:3, AR284:3, AR283:3, AR282:3, AR222:3, AR269:3, AR286:3, AR298:2, AR266:2, AR052:2, AR262:2, AR249:2, AR311:2, AR292:2, AR309:2, AR295:2, AR233:2, AR236:2, AR296:2, AR268:2, AR267:2, AR253:2, AR270:2, AR255:2, AR183:2, AR285:2, AR165:2, AR177:2, AR228:2, AR289:2, AR061:2, AR186:2, AR300:2, AR168:2, AR033:2, AR239:2, AR235:1, AR231:1, AR215:1, AR277:1, AR225:1, AR290:1, AR274:1, AR293:1, AR163:1, AR247:1, AR310:1, AR217:1, AR226:1, AR238:1, AR240:1, AR265:1, AR237:1, AR264:1, AR224:1, AR229:1, AR053:1, AR172:1, AR271:1, L0803:14, L0774:4, L0770:2, H0409:1, H0331:1 and H0555:1.
	HSDSB09	463645	284	
150	HSDSSE75	545057	160	AR096:3, AR225:3, AR266:3, AR055:3, AR060:3, AR309:2, AR170:2, AR222:2, AR104:2, AR214:2, AR254:2, AR163:2, AR161:2, AR195:2, AR282:2, AR089:1, AR224:1, AR283:1, AR275:1, AR228:1, AR162:1, AR300:1, AR272:1, AR216:1,

151	HSIDJ81	589447	161	AR240:1, AR290:1, AR175:1, AR185:1, AR201:1, AR193:1, AR200:1, AR164:1, AR166:1, AR316:1, AR168:1, AR230:1, AR165:1, AR218:1, H0646:2, L0783:2, L0751:2, H0222:1, L3645:1, H0409:1, H0559:1, H0590:1, H0581:1, L0471:1, H0622:1, H0316:1, H0623:1, L0788:1, H0689:1, S0328:1, S0390:1, L0773:1, L0731:1 and L0462:1. AR313:41, AR039:35, AR096:26, AR173:25, AR299:21, AR258:20, AR180:20, AR185:19, AR089:18, AR262:18, AR161:18, AR162:18, AR179:18, AR269:17, AR240:17, AR300:17, AR175:17, AR163:17, AR257:17, AR165:17, AR191:17, AR229:17, AR196:16, AR164:16, AR247:16, AR316:16, AR166:15, AR218:15, AR183:15, AR277:15, AR178:14, AR181:14, AR199:14, AR182:13, AR234:13, AR270:13, AR293:13, AR236:13, AR174:13, AR233:12, AR200:12, AR238:12, AR268:11, AR189:11, AR260:11, AR285:11, AR060:11, AR219:11, AR297:11, AR294:10, AR104:10, AR203:10, AR226:10, AR188:10, AR287:10, AR255:10, AR296:10, AR176:10, AR177:10, AR267:10, AR282:9, AR230:9, AR275:9, AR290:8, AR264:8, AR231:8, AR261:8, AR237:8, AR242:8, AR190:8, AR192:8, AR288:7, AR274:7, AR286:7, AR055:7, AR291:7, AR228:7, AR239:7, AR235:7, AR033:7, AR295:6, AR227:6, AR263:6, AR266:6, AR197:5, AR211:5, AR308:5, AR053:5, AR256:5, AR250:5, AR232:4, AR210:4, AR272:4, AR213:4, AR283:4, AR271:4, AR289:4, AR312:4, AR252:4, AR193:4, AR212:3, AR223:3, AR246:3, AR311:3, AR225:3, AR061:3, AR169:3, AR205:3, AR198:3, AR170:2, AR215:2, AR201:2, AR207:2, AR243:2, AR309:2, AR224:2, AR171:2, AR168:2, AR217:2, AR216:2, AR172:2, AR195:1, H0036:1 and L0744:1. AR039:106, AR104:103, AR055:103, AR240:102, AR060:87, AR096:84, AR282:77, AR283:67, AR300:66, AR316:57, AR185:48, AR219:45, AR218:44, AR089:40, AR299:36, AR277:34, AR313:31, S0212:13, S0126:12, L0777:11, S0027:10, S0028:10, S0250:7, H0717:6, L0662:6, L0747:6, S0360:5, S0022:5, S0206:5, L0779:5, S0194:5, L0659:4, L0751:4, L0731:4, L0758:4, H0713:3, H0716:3, S0444:3, H0599:3, L0163:3, S0210:3, L0807:3, S0390:3, S0037:3, S3014:3, L0740:3, S0192:3, H0295:2, H0486:2, H0706:2, H0309:2, H0023:2, H0373:2, H0266:2, H0039:2, H0038:2, L0598:2, L3872:2, H0689:2, L0757:2, L0759:2, L0599:2, S0011:2, S0040:1, L2906:1, S0298:1, H0661:1, H0663:1, H0662:1, S0420:1, S0356:1, S0442:1, S0408:1, L2338:1, S0046:1, H0411:1, H0550:1, H0586:1, H0587:1, H0333:1, T0040:1, T0060:1, H0427:1, H0251:1, H0150:1, H0050:1, H0014:1, H0188:1, S0214:1, H0428:1, H0622:1, T0006:1, H0553:1, H0628:1, H0124:1, H0087:1, H0551:1, T0067:1, H0413:1, T0069:1, S0440:1, L0762:1, L0763:1, L0770:1, L0769:1, L0637:1, L0773:1, L0768:1, L0794:1, L0386:1, L0774:1, L0775:1, L0375:1, L0805:1, L0776:1, L0655:1, L0783:1, L0519:1, L0367:1, L0790:1, L0666:1, L0663:1, L2263:1, L0565:1, S0148:1, H0726:1, H0724:1, L0438:1, H0519:1, S0152:1, S0454:1, H0521:1, H0696:1, S3012:1, S0124:1, L0439:1, L0750:1, H0595:1, S0436:1, H0668:1, H0667:1, S0242:1, S0276:1 and L3603:1.
152	HSKDA27	1352409	162	AR252:303, AR263:240, AR211:227, AR272:220, AR210:215, AR216:184, AR253:180, AR250:170, AR264:169, AR242:163, AR172:160, AR245:160, AR274:155, AR254:148, AR247:147, AR313:142, AR165:141, AR053:139, AR225:136, AR195:131, AR215:129, AR221:129, AR308:124, AR197:123, AR214:123, AR212:122, AR170:119, AR166:118, AR224:118, AR213:117, AR171:115, AR205:113, AR312:113, AR162:109, AR217:108, AR309:106, AR199:106, AR271:105, AR164:100, AR198:93, AR168:92, AR188:92, AR207:91, AR275:91, AR173:91, AR256:90, AR291:89, AR240:89, AR163:86, AR296:82, AR246:82, AR222:81, AR311:78, AR290:78, AR223:77, AR282:76, AR161:75, AR297:75, AR289:75, AR196:74, AR261:73, AR243:71, AR178:70, AR295:70, AR260:69, AR175:67, AR183:66, AR200:65, AR174:63, AR285:63, AR201:62, AR096:61, AR299:60, AR179:59, AR189:59, AR288:56, AR180:56, AR033:55,
	HSKDA27	1074734	285	
	HSKDA27	872570	286	
153	HSKGN81	676075	163	AR252:303, AR263:240, AR211:227, AR272:220, AR210:215, AR216:184, AR253:180, AR250:170, AR264:169, AR242:163, AR172:160, AR245:160, AR274:155, AR254:148, AR247:147, AR313:142, AR165:141, AR053:139, AR225:136, AR195:131, AR215:129, AR221:129, AR308:124, AR197:123, AR214:123, AR212:122, AR170:119, AR166:118, AR224:118, AR213:117, AR171:115, AR205:113, AR312:113, AR162:109, AR217:108, AR309:106, AR199:106, AR271:105, AR164:100, AR198:93, AR168:92, AR188:92, AR207:91, AR275:91, AR173:91, AR256:90, AR291:89, AR240:89, AR163:86, AR296:82, AR246:82, AR222:81, AR311:78, AR290:78, AR223:77, AR282:76, AR161:75, AR297:75, AR289:75, AR196:74, AR261:73, AR243:71, AR178:70, AR295:70, AR260:69, AR175:67, AR183:66, AR200:65, AR174:63, AR285:63, AR201:62, AR096:61, AR299:60, AR179:59, AR189:59, AR288:56, AR180:56, AR033:55,

				AR258:55, AR266:55, AR300:55, AR267:54, AR181:51, AR192:51, AR262:51, AR293:50, AR268:50, AR255:49, AR204:48, AR270:47, AR316:47, AR039:46, AR190:43, AR238:43, AR235:43, AR182:42, AR089:41, AR229:40, AR236:39, AR269:39, AR277:38, AR232:38, AR061:38, AR219:37, AR218:37, AR257:37, AR286:37, AR185:37, AR203:36, AR287:35, AR283:35, AR191:35, AR193:34, AR230:34, AR231:33, AR177:32, AR239:30, AR176:30, AR237:29, AR234:27, AR104:27, AR226:26, AR294:25, AR060:24, AR055:18, AR233:17, AR227:14, AR228:10, H0556:14, L0666:5, L0438:5, L0439:5, L0751:5, H0266:4, L0665:4, L0777:4, H0161:3, H0645:3, H0599:3, H0594:3, L0763:3, H0436:3, L0747:3, L0758:3, L0759:3, H0423:3, H0265:2, H0141:2, S0045:2, S0476:2, H0575:2, H0421:2, T0041:2, H0529:2, L0770:2, L0771:2, L0657:2, L5623:2, L0664:2, H0670:2, H0518:2, S0044:2, L0749:2, L0757:2, L0588:2, L0599:2, H0585:1, L3643:1, H0716:1, H0717:1, H0716:1, H0740:1, H0583:1, S0116:1, H0341:1, H0254:1, H0255:1, H0306:1, H0402:1, S0360:1, S0408:1, S0046:1, S0132:1, H0619:1, H0549:1, H0550:1, S0222:1, H0614:1, H0392:1, H0455:1, H0592:1, H0586:1, H0587:1, S0005:1, H0497:1, H0492:1, H0486:1, H0250:1, T0071:1, H0581:1, H0052:1, H0309:1, H0545:1, H0050:1, L0471:1, H0024:1, L0183:1, H0267:1, H0687:1, H0286:1, H0328:1, L0483:1, L0053:1, H0628:1, H0169:1, H0674:1, S0366:1, H0038:1, H0634:1, H0264:1, H0488:1, H0268:1, H0100:1, T0042:1, H0494:1, S0014:1, H0625:1, H0509:1, H0641:1, S0002:1, L0637:1, L3905:1, L0646:1, L0773:1, L0662:1, L0768:1, L0652:1, L0776:1, L0659:1, L0783:1, S0374:1, H0783:1, H0593:1, S0126:1, H0659:1, H0658:1, H0648:1, H0672:1, S0312:1, S0028:1, L0754:1, L0750:1, L0731:1, S0260:1, S0436:1, L0596:1, L0581:1, S0242:1, S0194:1, H0543:1, S0446:1, H0506:1 and H0008:1.
	HSKGN81	409905	287	AR170:5, AR169:4, AR180:4, AR313:4, AR221:3, AR178:3, AR223:3, AR245:3, AR192:3, AR235:2, AR204:2, AR182:2, AR299:2, AR216:2, AR291:2, AR274:2, AR171:2, AR214:2, AR217:2, AR193:2, AR266:1, AR308:1, AR293:1, AR257:1, AR247:1, AR232:1, AR225:1, AR283:1, AR210:1, AR282:1 H0163:2
154	HSNAD72	467397	164	AR242:8, AR205:6, AR238:6, AR170:6, AR207:5, AR201:4, AR215:3, AR204:3, AR096:3, AR296:3, AR172:2, AR233:2, AR089:2, AR182:2, AR055:2, AR257:2, AR299:1, AR104:1, AR272:1, AR210:1, AR185:1, AR297:1 H0163:1
155	HSNMC45	1352201	165	AR197:9, AR271:8, AR176:7, AR162:7, AR161:7, AR201:7, AR163:7, AR192:6, AR204:6, AR207:6, AR266:6, AR267:6, AR228:6, AR229:6, AR169:6, AR177:6, AR237:6, AR198:6, AR233:5, AR245:5, AR181:5, AR193:5, AR250:5, AR243:5, AR053:5, AR269:5, AR239:5, AR309:5, AR089:5, AR180:5, AR264:5, AR165:5, AR214:5, AR182:4, AR060:4, AR224:4, AR061:4, AR268:4, AR261:4, AR178:4, AR166:4, AR230:4, AR257:4, AR226:4, AR183:4, AR164:4, AR270:4, AR275:4, AR231:4, AR236:4, AR096:4, AR179:4, AR246:4, AR289:4, AR039:4, AR055:4, AR293:4, AR196:4, AR175:4, AR316:4, AR272:4, AR234:4, AR168:4, AR225:4, AR286:4, AR247:4, AR312:4, AR212:4, AR255:4, AR296:4, AR242:4, AR294:3, AR300:3, AR290:3, AR185:3, AR205:3, AR291:3, AR238:3, AR262:3, AR227:3, AR295:3, AR287:3, AR288:3, AR174:3, AR297:3, AR216:3, AR311:3, AR277:3, AR170:3, AR191:3, AR285:3, AR188:3, AR213:3, AR215:3, AR313:3, AR217:3, AR308:3, AR232:3, AR203:3, AR195:3, AR282:3, AR173:2, AR033:2, AR172:2, AR189:2, AR171:2, AR274:2, AR223:2, AR190:2, AR299:2, AR104:2, AR211:2, AR258:2, AR200:2, AR283:2, AR263:2, AR256:2, AR221:2, AR199:2, AR240:2, AR222:2, AR210:2, AR253:1, AR254:1, AR260:1, AR219:1, AR218:1 S0007:1, H0555:1 and S0026:1.
156	HSQFP66	460537	166	AR225:4, AR309:4, AR060:4, AR192:3, AR235:3, AR162:3, AR055:3, AR161:3, AR163:3, AR215:3, AR275:3, AR169:3, AR254:3, AR217:3, AR233:2, AR170:2, AR177:2, AR181:2, AR236:2, AR255:2, AR228:2, AR180:2, AR289:2, AR237:2, AR254:3, AR217:3, AR233:2, AR170:2, AR177:2, AR181:2, AR236:2, AR255:2, AR228:2, AR180:2, AR289:2, AR237:2,
157	HSRFFZ57	892171	167	

158	HSUBW09	413246	168	AR243:2, AR239:2, AR166:2, AR285:2, AR266:2, AR272:2, AR287:2, AR222:2, AR274:2, AR176:2, AR061:2, AR271:2, AR223:2, AR247:2, AR214:1, AR224:1, AR240:1, AR172:1, AR213:1, AR283:1, AR262:1, AR295:1, AR033:1, AR089:1, AR174:1, AR229:1, AR216:1, AR234:1, AR238:1, AR231:1, AR316:1, AR218:1, AR300:1, AR293:1, S0022:4, AR186:66, AR202:60, AR259:59, AR206:59, AR292:58, AR061:56, AR052:56, AR227:49, AR251:49, AR244:48, AR249:47, AR281:45, AR310:44, AR280:44, AR033:43, AR055:42, AR194:42, AR192:41, AR241:41, AR273:40, AR300:40, AR314:38, AR185:38, AR248:38, AR315:37, AR104:36, AR232:36, AR299:35, AR233:34, AR229:34, AR237:34, AR275:34, AR184:33, AR060:32, AR265:31, AR039:31, AR177:29, AR198:28, AR053:28, AR294:28, AR282:27, AR243:26, AR256:26, AR309:25, AR313:25, AR231:25, AR246:25, AR295:25, AR298:24, AR089:24, AR219:24, AR096:24, AR274:24, AR312:23, AR204:23, AR293:22, AR284:22, AR267:21, AR205:21, AR316:21, AR271:21, AR247:20, AR226:20, AR238:19, AR213:19, AR175:19, AR234:18, AR218:17, AR253:16, AR289:16, AR277:14, AR258:14, AR179:13, AR266:12, AR286:12, AR263:12, AR285:12, AR296:12, AR183:11, AR291:11, AR270:10, AR240:9, AR182:9, AR268:8, AR269:8, AR290:8, AR163:5, AR287:4, AR176:3, AR250:3, AR215:3, AR225:2, AR201:2, AR172:2, AR224:2, AR221:2, AR264:2, AR214:1, AR165:1, AR195:1, AR193:1, AR257:1, AR216:1, L0766:5, L0749:3, S0134:2, L0770:2, L0794:2, L0809:2, L0790:2, H0556:1, H0735:1, L0622:1, H0457:1, H0561:1, L0662:1, L0804:1, L5622:1, L0779:1, L0731:1, L0758:1, H0136:1 and H0506:1.
159	HSVBU91	596868	169	AR215:6, AR207:5, AR162:4, AR161:4, AR163:4, AR309:4, AR271:4, AR266:4, AR165:4, AR176:4, AR164:4, AR272:3, AR039:3, AR192:3, AR213:3, AR253:3, AR166:3, AR264:3, AR089:3, AR282:3, AR204:3, AR235:3, AR205:3, AR313:3, AR053:3, AR201:2, AR224:2, AR178:2, AR275:2, AR181:2, AR267:2, AR182:2, AR269:2, AR277:2, AR104:2, AR286:2, AR246:2, AR287:2, AR289:2, AR033:2, AR243:2, AR237:2, AR230:2, AR268:2, AR293:2, AR293:2, AR180:2, AR060:2, AR175:2, AR198:2, AR229:2, AR177:2, AR270:2, AR233:2, AR183:2, AR228:2, AR261:2, AR239:2, AR316:2, AR285:2, AR179:2, AR232:1, AR231:1, AR312:1, AR061:1, AR288:1, AR257:1, AR096:1, AR291:1, AR225:1, AR226:1, AR294:1, AR295:1, AR185:1, AR311:1, AR227:1, AR234:1, AR174:1, AR203:1, AR297:1, AR173:1, AR191:1, AR247:1, AR308:1, AR238:1, AR216:1, AR255:1, AR170:1, H0309:1.
160	HTAEE28	1018291	170	AR170:5, AR169:4, AR221:3, AR250:3, AR217:3, AR242:2, AR263:2, AR171:2, AR193:2, AR245:2, AR201:2, AR172:2, AR183:2, AR300:2, AR216:1, AR267:1, AR309:1, AR257:1, AR269:1, AR224:1, AR168:1, AR161:1, AR215:1, AR311:1, H0250:3, H0069:2, L0771:2, S0404:2, H0650:1, H0656:1, H0486:1, H0013:1, H0318:1, S0422:1, L0644:1, L0768:1, L0794:1, L0804:1, L0655:1, L0789:1, L0664:1, H0436:1 and L0758:1.
	HTAEE28	882919	289	
	HTAEE28	864120	290	
161	HTECC05	1352365	171	AR176:5, AR169:3, AR224:3, AR180:3, AR291:3, AR225:3, AR238:3, AR267:3, AR261:2, AR245:2, AR289:2, AR270:2, AR257:2, AR175:2, AR269:2, AR168:2, AR181:2, AR228:2, AR243:2, AR309:2, AR285:2, AR295:2, AR217:2, AR230:2, AR293:2, AR239:2, AR171:2, AR177:2, AR294:2, AR236:2, AR313:1, AR296:1, AR231:1, AR290:1, AR190:1, AR227:1, AR179:1, AR246:1, AR312:1, AR287:1, AR247:1, AR271:1, AR266:1, AR178:1, AR250:1, AR061:1, AR182:1, AR268:1, AR233:1, AR196:1, AR262:1, AR234:1, AR272:1, AR162:1, AR277:1, AR096:1, H0617:10, S0410:8, L0758:8, L0769:7, H0038:6, L0439:6, L0750:6, L0752:6, S0360:5, L0775:5, S0406:5, H0150:4, L0157:4, H0620:4, H0087:4, S0440:4, S0344:4, L0763:4, S0328:4, L0747:4, H0224:3, H0484:3, H0402:3, S0049:3, H0708:3, L0773:3, L0805:3, L0809:3, L0519:3, H0670:3.

				L0748:3, L0731:3, L0757:3, L0581:3, H0295:2, H0341:2, S0444:2, S0222:2, L0622:2, H0253:2, H0309:2, T0115:2, H0544:2, H0545:2, H0081:2, H0012:2, H0673:2, S0036:2, H0616:2, L0774:2, L0518:2, H0725:2, S0374:2, H0696:2, L0588:2, H0543:2, L0615:1, H0160:1, H0225:1, H0713:1, S0624:1, S0430:1, H0656:1, S0116:1, S0212:1, H0483:1, H0306:1, H0638:1, H0125:1, S0420:1, S0358:1, S0408:1, H0637:1, S0276:1, H0640:1, H0411:1, S0278:1, H0441:1, H0461:1, H0298:1, H0333:1, L0623:1, H0486:1, H0427:1, H0156:1, H0599:1, T0082:1, T0048:1, H0318:1, H0581:1, H0196:1, H0597:1, L0738:1, H0530:1, H0242:1, H0024:1, H0373:1, L0163:1, H0275:1, H0188:1, H0284:1, S0003:1, H0428:1, H0213:1, H0405:1, H0181:1, H0182:1, H0606:1, L0055:1, H0163:1, H0063:1, T0067:1, H0100:1, H0560:1, H0561:1, H0647:1, S0142:1, L0598:1, L3904:1, L0761:1, L0772:1, L0764:1, L0767:1, L0768:1, L0766:1, L0649:1, L0803:1, L0375:1, L0806:1, L0776:1, L0517:1, L0526:1, L0783:1, L0789:1, H0144:1, L0438:1, H0689:1, H0690:1, H0682:1, H0683:1, H0435:1, H0659:1, H0648:1, H0521:1, H0522:1, S014:1, S0027:1, L0755:1, L0759:1, H0445:1, H0343:1, H0595:1, L0608:1, H0136:1, S0276:1, H0542:1, L0600:1 and H0352:1.
	HTECC05	877448	291	
	HTECC05	666743	292	
162	HTEEB42	206980	172	AR174:12, AR191:12, AR190:11, AR244:11, AR181:11, AR291:10, AR186:10, AR180:10, AR175:10, AR192:10, AR189:9, AR176:9, AR240:9, AR269:9, AR241:9, AR178:9, AR270:9, AR177:8, AR266:8, AR268:8, AR183:8, AR273:8, AR274:8, AR165:8, AR247:7, AR164:7, AR198:7, AR184:7, AR166:7, AR162:7, AR202:7, AR161:7, AR163:7, AR246:7, AR245:6, AR197:6, AR289:6, AR173:6, AR201:6, AR267:6, AR182:6, AR271:6, AR052:6, AR206:6, AR309:6, AR185:6, AR188:6, AR275:6, AR263:6, AR251:5, AR236:5, AR284:5, AR194:5, AR295:5, AR255:5, AR235:5, AR277:5, AR299:5, AR179:5, AR055:5, AR290:5, AR104:5, AR033:5, AR193:5, AR228:4, AR230:4, AR204:4, AR196:4, AR170:4, AR285:4, AR256:4, AR172:4, AR272:4, AR257:4, AR262:4, AR205:4, AR233:4, AR308:4, AR261:4, AR195:4, AR252:4, AR300:4, AR223:4, AR089:4, AR287:4, AR238:4, AR243:4, AR214:4, AR296:4, AR237:4, AR250:4, AR239:4, AR288:4, AR298:4, AR224:3, AR294:3, AR229:3, AR248:3, AR316:3, AR207:3, AR286:3, AR312:3, AR297:3, AR264:3, AR199:3, AR061:3, AR293:3, AR053:3, AR227:3, AR060:3, AR311:3, AR211:3, AR249:3, AR225:3, AR292:3, AR219:3, AR258:3, AR039:3, AR215:3, AR313:3, AR282:3, AR226:3, AR260:3, AR231:2, AR242:2, AR203:2, AR171:2, AR168:2, AR210:2, AR200:2, AR259:2, AR234:2, AR096:2, AR232:2, AR169:2, AR222:2, AR254:2, AR218:2, AR221:2, AR253:2, AR283:2, AR213:1, AR216:1, AR217:1, AR310:1, L0794:4, H0624:2, H0038:2, L0375:2, S0330:2, L0750:2, L0779:2, H0031:1, H0644:1, H0124:1, H0591:1, H0616:1, H0264:1, H0623:1, L0770:1, L0637:1, L0805:1, L0663:1, L0749:1, L0777:1, L0780:1 and L0599:1.
163	HTEFU65	543396	173	AR240:15, AR055:12, AR060:7, AR039:6, AR299:6, AR219:6, AR277:5, AR089:5, AR218:5, AR300:5, AR185:5, AR104:5, AR283:4, AR282:4, AR316:4, AR096:3, AR313:3, H0486:3, H0253:1, H0544:1, H0012:1, S0388:1, H0553:1, H0090:1, H0038:1, H0652:1, L0769:1, L0641:1, L0806:1, H0696:1, L0748:1, L0749:1, S0031:1 and S0196:1.
164	HTELP17	836072	174	AR263:33, AR223:32, AR214:31, AR309:30, AR224:29, AR264:29, AR283:27, AR308:27, AR222:27, AR169:25, AR235:25, AR172:25, AR277:24, AR212:23, AR053:23, AR168:23, AR213:22, AR171:22, AR316:21, AR221:21, AR311:21, AR261:21, AR217:20, AR089:20, AR170:20, AR055:19, AR219:19, AR282:19, AR165:19, AR312:19, AR162:19, AR225:19, AR216:19, AR161:18, AR164:18, AR176:18, AR218:18, AR033:18, AR295:18, AR163:18, AR207:18, AR104:18, AR096:17, AR236:17, AR166:17, AR215:16, AR299:16, AR177:16, AR240:16, AR060:16, AR196:15, AR288:15, AR266:15, AR300:15, AR269:15,

165	HTELS08	847090	175	AR039:15, AR200:15, AR181:15, AR313:15, AR291:14, AR178:14, AR293:14, AR185:14, AR272:14, AR286:14, AR253:13, AR210:13, AR294:13, AR270:13, AR296:13, AR285:13, AR227:13, AR239:13, AR297:13, AR233:12, AR174:12, AR245:12, AR183:12, AR252:12, AR192:12, AR230:12, AR226:12, AR287:12, AR175:12, AR257:12, AR195:12, AR258:12, AR274:12, AR229:11, AR289:11, AR237:11, AR179:11, AR267:11, AR255:11, AR247:11, AR061:11, AR262:11, AR290:11, AR231:11, AR191:11, AR275:11, AR268:11, AR180:10, AR182:10, AR199:10, AR234:10, AR204:10, AR205:10, AR173:10, AR188:10, AR228:10, AR232:10, AR238:9, AR198:9, AR190:9, AR197:9, AR203:9, AR256:9, AR189:8, AR254:8, AR250:8, AR246:7, AR211:7, AR193:7, AR260:7, AR243:7, AR201:7, AR271:6, AR242:5, L0758:3, S0408:2, H0031:2, H0038:2, L0766:2, H0521:2, L0748:2, H0341:1, L3659:1, S0476:1, H0581:1, S0051:1, H0266:1, H0111:1, H0616:1, L0794:1, L0805:1, L0787:1, L0779:1, L0759:1, L0593:1, H0542:1 and H0543:1.
166	HTELS08	847090	175	AR235:6, AR215:6, AR242:5, AR162:4, AR161:4, AR192:4, AR165:4, AR053:4, AR163:4, AR269:4, AR164:4, AR291:4, AR288:4, AR166:4, AR176:4, AR221:4, AR257:4, AR282:3, AR236:3, AR217:3, AR264:3, AR261:3, AR196:3, AR178:3, AR270:3, AR177:3, AR272:3, AR181:3, AR255:3, AR297:3, AR294:3, AR172:3, AR182:3, AR295:3, AR296:3, AR055:3, AR060:3, AR285:3, AR179:3, AR240:3, AR191:3, AR287:3, AR216:3, AR293:3, AR175:3, AR183:3, AR225:3, AR313:3, AR199:3, AR180:3, AR238:3, AR233:3, AR195:3, AR223:2, AR239:2, AR228:2, AR173:2, AR168:2, AR311:2, AR262:2, AR290:2, AR263:2, AR237:2, AR268:2, AR188:2, AR266:2, AR033:2, AR229:2, AR247:2, AR207:2, AR277:2, AR286:2, AR174:2, AR300:2, AR267:2, AR193:2, AR250:2, AR230:2, AR258:2, AR189:2, AR246:2, AR289:2, AR096:2, AR231:2, AR283:2, AR185:2, AR089:2, AR222:2, AR275:2, AR308:2, AR201:2, AR260:2, AR190:2, AR316:2, AR312:2, AR061:2, AR226:2, AR243:2, AR299:2, AR104:2, AR171:1, AR200:1, AR219:1, AR309:1, AR227:1, AR203:1, AR256:1, AR039:1, AR234:1, AR169:1, AR232:1, H0616:2, L0758:2 and H0038:1.
166	HTELS08	847090	175	AR173:20, AR262:20, AR313:19, AR196:16, AR161:16, AR162:15, AR175:15, AR163:15, AR258:15, AR165:15, AR164:14, AR166:14, AR178:13, AR257:13, AR300:13, AR179:13, AR181:12, AR233:12, AR229:12, AR174:12, AR183:12, AR247:12, AR240:11, AR234:11, AR177:11, AR191:11, AR200:10, AR236:10, AR293:10, AR242:10, AR199:10, AR269:10, AR182:10, AR180:10, AR260:9, AR255:9, AR275:8, AR238:8, AR264:8, AR228:8, AR270:8, AR261:8, AR188:8, AR297:8, AR231:8, AR185:8, AR226:8, AR294:8, AR296:8, AR176:8, AR312:8, AR287:8, AR203:7, AR219:7, AR268:7, AR290:7, AR230:7, AR033:7, AR267:7, AR274:7, AR096:7, AR237:7, AR213:7, AR189:7, AR285:6, AR286:6, AR288:6, AR197:6, AR295:6, AR053:6, AR212:6, AR308:6, AR291:6, AR204:6, AR218:6, AR266:6, AR309:6, AR198:6, AR089:5, AR235:5, AR282:5, AR193:5, AR170:5, AR299:5, AR263:5, AR239:5, AR256:5, AR210:5, AR190:5, AR277:5, AR289:5, AR316:5, AR169:4, AR217:4, AR192:4, AR060:4, AR201:4, AR223:4, AR227:4, AR245:4, AR171:4, AR252:4, AR243:4, AR221:4, AR232:4, AR211:4, AR061:4, AR272:4, AR271:3, AR311:3, AR195:3, AR205:3, AR039:3, AR172:3, AR250:3, AR214:2, AR207:2, AR055:2, AR168:2, AR222:2, AR283:2, AR224:2, AR104:2, AR215:2, AR216:1, AR225:1, H0253:1.
167	HTELS08	847090	175	AR219:14, AR218:13, AR104:11, AR240:9, AR060:8, AR055:7, AR299:7, AR096:7, AR316:7, AR185:6, AR313:6, AR089:6, AR300:6, AR039:5, AR283:4, AR282:4, AR277:2, L0438:6, L0439:5, H0661:3, L0776:3, H0556:2, H0100:2, L0598:2, L0764:2, L0766:2, H0672:2, L0777:2, L0731:2, H0170:1, H0171:1, H0265:1, H0140:1, S0114:1, H0657:1, H0656:1, H0638:1, S0418:1, S0408:1, H0730:1, H0741:1, S0046:1, H0411:1, S0278:1, H0550:1, S0222:1, T0104:1, H0600:1, S0280:1, S0474:1, H0007:1, T0110:1, H0046:1, H0457:1, H0150:1, H0566:1, H0620:1, H0057:1, H0039:1, H0030:1, L0055:1, H0090:1, H0413:1, H0623:1, H0059:1, H0647:1, H0529:1, L0770:1, L0646:1, L0645:1, L0521:1, L0794:1, L0650:1, L0659:1, H0090:1, H0413:1, H0623:1, H0059:1, H0647:1, H0529:1, L0770:1, L0646:1, L0645:1, L0521:1, L0794:1, L0650:1, L0659:1.

				L5623:1, L0789:1, L0666:1, L0663:1, L0664:1, H0144:1, H0547:1, S0152:1, L0740:1, L0747:1, L0750:1, L0756:1, L0779:1, L0757:1, L0758:1, L0595:1 and H0422:1.
	HTPCS72	566683	293	
168	HTPIH83	919916	178	AR176:5, AR180:5, AR266:5, AR182:5, AR223:4, AR267:4, AR183:4, AR233:4, AR269:4, AR181:4, AR228:4, AR236:4, AR245:4, AR224:4, AR169:3, AR225:3, AR238:3, AR231:3, AR168:3, AR257:3, AR229:3, AR161:3, AR162:3, AR177:3, AR293:3, AR237:3, AR221:3, AR289:3, AR163:3, AR268:3, AR239:3, AR215:3, AR261:3, AR288:3, AR170:3, AR175:3, AR226:3, AR174:3, AR199:3, AR290:3, AR179:2, AR191:2, AR255:2, AR264:2, AR234:2, AR061:2, AR217:2, AR240:2, AR282:2, AR216:2, AR294:2, AR060:2, AR196:2, AR287:2, AR172:2, AR173:2, AR178:2, AR285:2, AR295:2, AR200:2, AR291:2, AR222:2, AR190:2, AR247:2, AR189:2, AR309:2, AR203:2, AR188:2, AR300:2, AR230:2, AR311:2, AR296:2, AR262:2, AR171:2, AR275:2, AR235:1, AR232:1, AR227:1, AR258:1, AR286:1, AR033:1, AR297:1, AR039:1, AR256:1, AR316:1, AR313:1, AR089:1, AR185:1, AR277:1, H0622:7, S0360:3, L0809:3, L0804:2, L0774:2, L0775:2, L0748:2, H0484:1, H0014:1, S0440:1, L0646:1, L0643:1, L0374:1, L0764:1, L0771:1, L0773:1, L0662:1, L0803:1 and L0788:1.
	HTPIH83	895024	294	
	HTPIH83	898088	295	
169	HTSEW17	460579	179	AR170:7, AR161:7, AR162:7, AR163:7, AR182:7, AR225:6, AR176:6, AR282:5, AR228:5, AR223:5, AR266:5, AR180:5, AR224:5, AR178:5, AR269:5, AR181:5, AR261:5, AR309:5, AR233:5, AR250:5, AR191:5, AR216:4, AR257:4, AR231:4, AR267:4, AR236:4, AR268:4, AR274:4, AR229:4, AR270:4, AR214:4, AR179:4, AR239:4, AR165:4, AR288:4, AR247:4, AR263:4, AR089:4, AR255:4, AR237:4, AR061:4, AR164:4, AR287:3, AR275:3, AR240:3, AR177:3, AR096:3, AR264:3, AR174:3, AR166:3, AR183:3, AR234:3, AR293:3, AR291:3, AR295:3, AR173:3, AR300:3, AR168:3, AR200:3, AR299:3, AR190:3, AR221:3, AR196:3, AR296:3, AR290:3, AR316:3, AR294:3, AR262:3, AR175:3, AR297:3, AR185:3, AR238:3, AR313:3, AR060:3, AR230:3, AR055:3, AR039:3, AR283:3, AR286:3, AR227:3, AR260:2, AR172:2, AR285:2, AR053:2, AR308:2, AR217:2, AR311:2, AR188:2, AR277:2, AR203:2, AR226:2, AR272:2, AR232:2, AR192:2, AR222:2, AR189:2, AR201:2, AR213:2, AR312:2, AR258:2, AR193:2, AR289:2, AR171:2, AR199:2, AR256:1, AR219:1, AR212:1, AR215:1, AR211:1, AR033:1, AR218:1, H0087:1, S0002:1, L0769:1, L0789:1, H0683:1, H0670:1, L0748:1, L0749:1, L0752:1 and L0758:1.
170	HTTB176	637725	180	AR252:4, AR214:4, AR309:3, AR169:3, AR297:3, AR193:3, AR250:3, AR271:3, AR291:3, AR161:3, AR272:2, AR033:2, AR294:2, AR217:2, AR221:2, AR223:2, AR312:2, AR168:2, AR163:2, AR261:2, AR181:2, AR210:1, AR197:1, AR225:1, AR205:1, AR267:1, AR270:1, AR165:1, AR222:1, AR216:1, AR170:1, AR295:1, AR166:1, AR213:1, L0803:4, L0731:4, L0774:3, S0380:3, S0028:3, L0758:3, H0486:2, S0003:2, H0040:2, S0344:2, L0766:2, L0775:2, H0547:2, L0748:2, L0756:2, L0777:2, L0780:2, L0753:2, S0011:2, H0716:1, H0638:1, L0617:1, S0358:1, H0411:1, S0280:1, H0318:1, H0355:1, H0674:1, H0212:1, H0135:1, H0038:1, H0132:1, S0142:1, S0002:1, H0529:1, L0804:1, L0632:1, L0666:1, H0682:1, H0684:1, H0525:1, S0044:1, S0406:1, H0555:1, L0747:1, L0750:1, L0752:1, L0755:1, L0604:1 and S0026:1.
171	HTTBS64	1008159	181	AR282:4, AR252:4, AR269:3, AR171:3, AR170:3, AR264:2, AR176:2, AR291:2, AR311:2, AR225:2, AR277:2, AR168:2, AR270:2, AR172:2, AR262:1, AR271:1, AR055:1, AR272:1, AR299:1, AR257:1, AR313:1, H0040:1
	HTTBS64	863187	296	

172	HTTBS64 HTXJM03	754125 603918	297 182	AR313:13, AR252:10, AR282:8, AR312:7, AR176:7, AR096:7, AR269:6, AR254:6, AR201:6, AR196:6, AR245:6, AR250:6, AR270:6, AR197:6, AR053:6, AR161:6, AR162:6, AR180:6, AR089:6, AR163:6, AR169:6, AR191:5, AR170:5, AR240:5, AR165:5, AR178:5, AR183:5, AR290:5, AR164:5, AR166:5, AR300:5, AR257:5, AR039:5, AR264:5, AR229:5, AR203:5, AR266:5, AR268:5, AR267:5, AR255:5, AR181:5, AR236:5, AR297:5, AR233:4, AR296:4, AR309:4, AR182:4, AR193:4, AR228:4, AR179:4, AR175:4, AR188:4, AR247:4, AR316:4, AR173:4, AR177:4, AR293:4, AR271:4, AR231:4, AR213:4, AR060:4, AR225:4, AR308:4, AR212:4, AR243:4, AR285:4, AR200:4, AR199:4, AR192:4, AR287:4, AR189:4, AR294:4, AR286:4, AR238:4, AR299:3, AR291:3, AR295:3, AR239:3, AR261:3, AR237:3, AR263:3, AR198:3, AR283:3, AR172:3, AR185:3, AR216:3, AR204:3, AR288:3, AR311:3, AR234:3, AR205:3, AR262:3, AR258:3, AR289:3, AR055:3, AR277:3, AR224:3, AR207:3, AR230:3, AR168:3, AR226:3, AR223:3, AR061:3, AR190:2, AR174:2, AR218:2, AR227:2, AR195:2, AR256:2, AR274:2, AR260:2, AR217:2, AR235:2, AR033:2, AR246:2, AR275:2, AR171:2, AR219:2, AR104:2, AR232:1, AR253:1, AR211:1, AR210:1, AR242:1, L0766:5, H0313:3, H0624:1, H0265:1, H0556:1, S0116:1, H0329:1, H0486:1, H0156:1, H0590:1, H0009:1, S0250:1, H0169:1, S0450:1, S0002:1, L0769:1, L0793:1, L0532:1, L0750:1, L0777:1 and S0424:1.
173	HTXON32	838288	183	AR195:107, AR197:91, AR172:81, AR246:78, AR295:74, AR272:72, AR258:71, AR196:67, AR224:67, AR235:67, AR171:66, AR193:66, AR291:63, AR297:59, AR223:58, AR168:57, AR200:56, AR263:55, AR222:54, AR170:53, AR261:53, AR245:52, AR236:52, AR169:52, AR311:49, AR256:49, AR225:49, AR188:48, AR173:48, AR285:48, AR288:47, AR281:46, AR260:46, AR198:46, AR313:46, AR174:45, AR201:45, AR271:45, AR191:44, AR175:44, AR217:44, AR286:44, AR287:43, AR309:43, AR270:43, AR264:42, AR211:42, AR274:42, AR308:41, AR199:41, AR181:40, AR294:40, AR214:39, AR262:39, AR216:39, AR243:39, AR189:39, AR275:38, AR177:38, AR215:38, AR033:38, AR255:37, AR296:37, AR210:36, AR190:36, AR257:36, AR289:35, AR213:35, AR282:34, AR240:34, AR218:34, AR163:32, AR247:32, AR176:31, AR180:30, AR312:30, AR254:30, AR212:30, AR166:29, AR300:29, AR162:29, AR293:29, AR203:29, AR183:29, AR219:28, AR161:28, AR192:28, AR242:28, AR165:27, AR250:27, AR269:27, AR185:27, AR164:26, AR039:25, AR104:25, AR266:24, AR290:24, AR316:24, AR179:23, AR182:23, AR178:23, AR096:22, AR238:21, AR053:21, AR205:20, AR268:20, AR089:20, AR207:19, AR267:19, AR299:19, AR204:19, AR229:18, AR234:18, AR226:17, AR277:17, AR231:17, AR253:16, AR237:15, AR232:14, AR230:14, AR233:14, AR060:13, AR283:11, AR239:10, AR055:9, AR061:9, AR228:9, AR252:8, AR227:6, H0556:1.
174	HUFCJ30	638402	184	AR277:9, AR207:8, AR215:7, AR192:7, AR170:6, AR223:6, AR282:6, AR235:6, AR216:6, AR225:6, AR165:6, AR169:6, AR171:6, AR164:5, AR245:5, AR168:5, AR166:5, AR198:5, AR222:5, AR089:5, AR242:5, AR183:5, AR195:5, AR221:5, AR193:4, AR224:4, AR214:4, AR313:4, AR252:4, AR172:4, AR243:4, AR236:4, AR201:4, AR299:4, AR295:4, AR246:4, AR238:4, AR264:4, AR176:4, AR161:4, AR240:4, AR162:4, AR309:4, AR204:4, AR263:4, AR163:4, AR261:4, AR217:4, AR297:4, AR316:3, AR285:3, AR182:3, AR269:3, AR270:3, AR205:3, AR308:3, AR197:3, AR060:3, AR311:3, AR230:3, AR055:3, AR173:3, AR196:3, AR250:3, AR288:3, AR272:3, AR213:3, AR234:3, AR181:3, AR312:3, AR283:3, AR199:3, AR180:3, AR033:3, AR266:3, AR175:3, AR254:3, AR177:3, AR262:3, AR296:3, AR300:3, AR268:3, AR290:3, AR231:3, AR287:3, AR247:3, AR294:3, AR191:3, AR275:3, AR291:2, AR237:2, AR228:2, AR179:2, AR174:2, AR096:2, AR289:2, AR178:2, AR233:2, AR229:2, AR286:2, AR255:2, AR226:2, AR185:2, AR293:2, AR200:2, AR188:2, AR189:2, AR227:2, AR257:2, AR212:2, AR203:2, AR239:2, AR104:2, AR053:2, AR061:2, AR258:2, AR039:2, AR232:2, AR271:2, AR218:2,

175	HUVEB53	571200	185	AR219:2, AR260:2, AR190:2, AR267:2, AR210:1, L0777:7, L0751:3, L0766:2, L0438:2, L0779:2, H0352:2, H0351:1, S0222:1, H0333:1, H0687:1, H0646:1, L0770:1, L0642:1, L0662:1, L0803:1, L0375:1, L0805:1, L0653:1, L0659:1, L0790:1, L0663:1, L0664:1, L0665:1 and H0506:1.
				AR053:3, AR171:3, AR224:3, AR180:2, AR168:2, AR207:2, AR165:2, AR282:2, AR217:2, AR299:2, AR234:1, AR277:1, AR296:1, AR295:1, AR164:1, AR261:1, AR166:1, AR204:1, AR225:1, AR257:1, AR283:1, AR269:1, AR183:1, H0171:3, L0754:3, H0431:2, H0196:2, H0546:2, H0623:2, H0539:2, H0696:2, L0744:2, L0748:2, L0749:2, L0758:2, L0759:2, S0398:2, H0624:1, T0002:1, S0040:1, H0341:1, S0360:1, H0580:1, H0587:1, H0574:1, H0486:1, H0036:1, S0665:1, H0123:1, H0014:1, S06028:1, S0214:1, H0553:1, H0032:1, L0455:1, H0598:1, H0038:1, H0616:1, H0056:1, S0386:1, S0112:1, T0042:1, S0344:1, S0422:1, S0002:1, L0775:1, L0806:1, L0805:1, L0776:1, S0152:1, H0704:1, H0555:1, H0436:1, L0439:1, L0751:1, L0752:1, L0731:1, L0588:1, L0592:1, S0026:1, H0543:1 and H0423:1.
176	HWAAD63	838626	186	AR196:17, AR173:14, AR161:14, AR162:14, AR241:14, AR163:14, AR165:13, AR313:12, AR166:12, AR164:12, AR262:12, AR264:11, AR236:11, AR199:10, AR191:10, AR174:9, AR178:9, AR257:9, AR235:9, AR180:9, AR263:8, AR203:8, AR181:8, AR200:8, AR229:8, AR274:7, AR189:7, AR275:7, AR311:7, AR240:7, AR247:7, AR297:7, AR312:7, AR175:7, AR308:7, AR212:7, AR261:7, AR169:7, AR265:7, AR188:7, AR234:6, AR177:6, AR221:6, AR194:6, AR287:6, AR242:6, AR258:6, AR207:6, AR230:6, AR255:6, AR176:6, AR293:6, AR168:6, AR271:6, AR224:6, AR179:6, AR270:6, AR185:6, AR192:6, AR233:5, AR198:5, AR300:5, AR096:5, AR214:5, AR216:5, AR183:5, AR238:5, AR272:5, AR269:5, AR039:5, AR226:5, AR223:5, AR299:5, AR296:5, AR215:5, AR285:5, AR260:5, AR089:5, AR288:5, AR182:4, AR204:4, AR239:4, AR228:4, AR222:4, AR213:4, AR309:4, AR231:4, AR060:4, AR033:4, AR210:4, AR252:4, AR273:4, AR286:4, AR053:4, AR268:4, AR294:4, AR237:4, AR193:4, AR172:4, AR243:4, AR218:4, AR267:4, AR277:4, AR310:4, AR104:3, AR295:3, AR291:3, AR190:3, AR225:3, AR282:3, AR316:3, AR227:3, AR290:3, AR171:3, AR217:3, AR186:3, AR211:3, AR266:3, AR195:3, AR219:3, AR249:3, AR292:3, AR052:3, AR201:3, AR206:2, AR245:2, AR314:2, AR232:2, AR202:2, AR298:2, AR289:2, AR315:2, AR256:2, AR244:2, AR259:2, AR205:2, AR246:2, AR001:1, AR184:1, AR284:1, AR280:1, AR283:1, AR055:1, H0441:1, H0581:1 and H0604:1.
	HWAAD63	833089	298	
	HWAAD63	793875	299	
177	HWADJ89	799506	187	AR252:29, AR250:29, AR253:21, AR254:10, AR282:6, AR215:6, AR165:5, AR164:5, AR166:5, AR089:5, AR161:5, AR246:5, AR162:5, AR271:5, AR240:5, AR053:5, AR163:5, AR263:4, AR243:4, AR274:4, AR195:4, AR205:4, AR313:4, AR096:4, AR299:4, AR180:4, AR213:4, AR193:4, AR214:4, AR169:4, AR300:4, AR311:4, AR264:4, AR192:4, AR173:4, AR207:4, AR312:3, AR285:3, AR171:3, AR309:3, AR060:3, AR275:3, AR308:3, AR196:3, AR272:3, AR316:3, AR269:3, AR257:3, AR261:3, AR170:3, AR270:3, AR183:3, AR242:3, AR245:3, AR296:3, AR199:3, AR287:3, AR295:3, AR175:3, AR033:3, AR172:3, AR222:2, AR188:2, AR039:2, AR185:2, AR290:2, AR286:2, AR247:2, AR238:2, AR191:2, AR297:2, AR178:2, AR268:2, AR291:2, AR262:2, AR200:2, AR235:2, AR104:2, AR283:2, AR212:2, AR210:2, AR288:2, AR203:2, AR201:2, AR174:2, AR277:2, AR182:2, AR197:2, AR189:2, AR255:2, AR294:2, AR229:2, AR230:2, AR293:2, AR258:2, AR216:2, AR236:2, AR224:2, AR181:2, AR190:2, AR239:2, AR228:2, AR227:2, AR233:2, AR234:1, AR177:1, AR231:1, AR179:1, AR061:1, AR266:1, AR055:1, AR226:1, AR221:1, AR289:1, AR232:1, H0581:1
178	HWBFX31	799427	188	AR171:3, AR309:2, AR271:2, AR282:2, AR225:2, AR205:2, AR267:2, AR213:2, AR257:2, AR236:2, AR053:1, AR266:1,

				AR179:1, AR199:1, AR270:1, AR214:1, AR181:1, AR240:1, AR247:1, AR277:1, L0659:5, L0794:4, L0809:4, L0777:4, H0424:3, L0766:3, L0745:3, H0265:2, H0656:2, H0254:2, H0662:2, S0376:2, H0457:2, H0024:2, L0768:2, H0670:2, H0555:2, L0751:2, L0780:2, H0556:1, H0218:1, H0224:1, H0638:1, S0360:1, H0675:1, S0408:1, H0580:1, H0586:1, H0575:1, H0545:1, H0050:1, H0188:1, H0252:1, H0039:1, H0617:1, H0316:1, H0063:1, H0087:1, H0264:1, H0272:1, H0652:1, S0002:1, S0426:1, L0763:1, L0770:1, L0773:1, L0648:1, L0662:1, L0774:1, L0776:1, L0784:1, L0647:1, L0790:1, L0666:1, L0664:1, L0665:1, L0438:1, H0521:1, H0522:1, L0749:1, L0750:1, L0752:1, L0757:1, L0759:1, L0596:1, H0422:1, S0458:1 and H0677:1.

Table 1C summarizes additional polynucleotides encompassed by the invention (including cDNA clones related to the sequences (Clone ID:), contig sequences (contig identifier (Contig ID:) contig nucleotide sequence identifiers (SEQ ID NO:X)), and genomic sequences (SEQ ID NO:B). The first column provides a unique clone identifier, "Clone ID:", for a cDNA clone related to each contig sequence. The second column provides the sequence identifier, "SEQ ID NO:X", for each contig sequence. The third column provides a unique contig identifier, "Contig ID:" for each contig sequence. The fourth column, provides a BAC identifier "BAC ID NO:A" for the BAC clone referenced in the corresponding row of the table. The fifth column provides the nucleotide sequence identifier, "SEQ ID NO:B" for a fragment of the BAC clone identified in column four of the corresponding row of the table. The sixth column, "Exon From-To", provides the location (i.e., nucleotide position numbers) within the polynucleotide sequence of SEQ ID NO:B which delineate certain polynucleotides of the invention that are also exemplary members of polynucleotide sequences that encode polypeptides of the invention (e.g., polypeptides containing amino acid sequences encoded by the polynucleotide sequences delineated in column six, and fragments and variants thereof).

Table 1C

cDNA Clone ID	SEQ ID NO:X	CONTIG ID:	BAC ID: A	SEQ ID NO:B	EXON From-To
HAUAI83	22	639009	AC010422	589	1-326 1552-2084 2162-2261 2300-2427 4485-5868 5948-6362 7914-8017 8569-8681 8765-8875 8968-9037 9284-9499 9742-9910 10837-11187 11271-11321 11554-11707 11783-12766 12866-13225 13256-13827 14284-14367 14890-15090
HAUAI83	22	639009	AC018761	590	1-326 1176-1284 1552-2084 2162-2261 2300-2426 4485-5868

					5948-6362 8569-8681 8765-8875 8968-9037 9284-9499 9742-9910 10317-10501 10837-11187 11271-11321 11554-11707 11783-12766 12866-13225 13256-13827 14284-14367 14890-15090
HAUAI83	22	639009	AC010422	591	1-315 2004-2289 2650-2741 3554-3830
HAUAI83	22	639009	AC010422	592	1-202 938-1047 1219-1395 1758-1956 2907-3429 3792-3935 5366-5485 6391-6688 6899-7269 7890-8316 8400-8524 8607-8682 8824-8999 9190-9302 9691-9796 10106-10177 10571-11051 11164-11490 12565-12696 13364-13501 13964-14592 14740-15540 15610-15798 15947-16642 16717-16832 16968-17408 17521-17612 18331-18579 19120-19303 19358-19514 19599-19702 20003-20245
HAUAI83	22	639009	AC018761	593	1-202 938-1047 1219-1395 1758-1956

					2907-3429 3792-3935 5366-5485 6391-6688 6899-7269 7591-7711 7890-8316 8400-8524 8607-8682 8749-9073 9190-9302 9691-9796
HAUAI83	22	639009	AC018761	594	1-82 128-293 1178-1447 1986-2278 2457-2711 3543-3844
HBINS58	26	1352386	AL096774	595	1-1023 2010-2239 2581-2962 3153-3223 3324-3493 3973-4126
HBINS58	26	1352386	AL096774	596	1-341
HBINS58	26	1352386	AL096774	597	1-142
HCE3G69	29	728432	AC068946	598	1-108 1186-1324 1746-1835 2138-2284 2448-2545 2718-2861 3091-5889
HCE3G69	29	728432	AC068946	599	1-191
HCE3G69	29	728432	AC068946	600	1-686
HCEFB80	31	1143407	AL022327	601	1-2271 3506-3658 4643-4810 9039-9164 9382-9509 10587-10720 11135-11195 11265-11716 14644-15466 17451-17526 18012-18114 20530-20632 20957-21009 23696-23785 25338-25575 25969-26166
HCNDR47	34	1016919	AL122003	602	1-236 531-696 787-817

					863-4508 5158-5744 6949-7029
HCNDR47	34	1016919	AL122003	603	1-888 1304-2003 2830-3284 3719-4571 4618-5268 6131-6557 8947-9033 9058-9726 14176-14480 18456-18915 18960-19871 22365-22454 23082-23248 28058-28215
HDPGT01	44	771583	AC020978	604	1-180 2776-2899 3916-4077 4296-4335 4436-4632 4895-5181 8153-8246 9547-9666 9907-10007 10370-10618 10788-11046 11926-13423 13465-13494 13764-15689
HDPGT01	44	771583	AC020978	605	1-384
HDPSB18	50	1043263	AL355512	606	1-2572 3049-3871
HDPSB18	50	1043263	AC006176	607	1-2571 3048-3872
HDPSB18	50	1043263	AL355512	608	1-280
HDPXY01	55	879048	AL354000	609	1-1319 4848-4975 5229-5600 6561-6654
HDPXY01	55	879048	AL035362	610	1-1316 4844-4971 5225-5596 6557-6650
HDPXY01	55	879048	AL354000	611	1-460
HDPXY01	55	879048	AL354000	612	1-400
HDPXY01	55	879048	AL035362	613	1-400
HDPXY01	55	879048	AL035362	614	1-460
HHGCG53	80	340818	AC024037	615	1-518
HHGCM76	81	662329	AC003665	616	1-70 304-609 900-1090 1240-1835

					2272-2490 2581-3598
HHGCM76	81	662329	AC003665	617	1-580 851-995 1224-1296 1314-1663 1930-1975 2724-2905 2968-3098 3283-3328 5121-5230 5331-5689
HJACG30	84	895505	AC018512	618	1-776
HJACG30	84	895505	AC022305	619	1-878
HJACG30	84	895505	AC002518	620	1-150
HLTIP94	105	1087335	AC007431	621	1-1299
HLTIP94	105	1087335	AC007431	622	1-330
HMSDL37	115	973996	AC012086	623	1-3328
HMSDL37	115	973996	AC018811	624	1-3051
HMSDL37	115	973996	AC018494	625	1-3029
HMSDL37	115	973996	AC012086	626	1-224
HMSDL37	115	973996	AC012086	627	1-468
HMSDL37	115	973996	AC018811	628	1-222
HMSDL37	115	973996	AC018811	629	1-468
HMSDL37	115	973996	AC018494	630	1-224
HMSDL37	115	973996	AC018494	631	1-1854
HNGOI12	128	1041375	AC003675	632	1-2128
HNGOI12	128	1041375	AC001228	633	1-2129
HNGOI12	128	1041375	AC013791	634	1-2132
HNHFM14	130	664507	AC020552	635	1-290
HNHFM14	130	664507	AC020552	636	1-96
HPJBK12	147	1011467	AC022033	637	1-2649
HPJBK12	147	1011467	AC013541	638	1-2649
HPJBK12	147	1011467	AC022033	639	1-190
HPJBK12	147	1011467	AC013541	640	1-190
HPRAL78	149	1352342	AC007783	641	1-2334 2508-3084 3578-3890 4198-4294 4376-4623 4712-5349 5369-6088 6527-7107 7298-7392 7730-7846 9147-9476 10487-10575 10791-11298 11485-11601 11783-13009 13207-13501 13540-13772 14439-14800 14923-14983

					15133-15355 15485-15653 16750-16805 16894-17078 17162-17219 18003-18089 21085-21146 21358-21501
HPRAL78	149	1352342	AC007783	642	1-308
HPRAL78	149	1352342	AC007783	643	1-1024
HRGBL78	153	910133	AL359541	644	1-254 2777-3307 3670-3823 4113-4385 4844-5381 5995-7365
HSAWD74	156	460527	AC004951	645	1-1651 1740-2593
HSAWD74	156	460527	AC004951	646	1-149
HSAWD74	156	460527	AC004951	647	1-5057 5082-8353 8404-8996
HTPCS72	177	854941	AL008639	648	1-106 1457-1595 1666-2484 2910-3006 3705-4147 4768-5141 5304-5536 5746-5874 7114-7241 7468-7711 7963-8746 9438-12408 12884-14976
HTPCS72	177	854941	AL008639	649	1-720
HTPIH83	178	919916	AL158821	650	1-1862 1880-3126

Tables 1D: The polynucleotides or polypeptides, or agonists or antagonists of the present invention can be used in assays to test for one or more biological activities. If these polynucleotides and polypeptides do exhibit activity in a particular assay, it is likely that these molecules may be involved in the diseases associated with the biological activity. Thus, the polynucleotides or polypeptides, or agonists or antagonists could be used to treat the associated disease.

The present invention encompasses methods of detecting, preventing, diagnosing, prognosticating, treating, and/or ameliorating a disease or disorder. In preferred embodiments, the present invention encompasses a method of treating a gastrointestinal disease or disorder

comprising administering to a patient in which such detection, treatment, prevention, and/or amelioration is desired a protein, nucleic acid, or antibody of the invention (or fragment or variant thereof) in an amount effective to detect, prevent, diagnose, prognosticate, treat, and/or ameliorate the gastrointestinal disease or disorder.

5 In another embodiment, the present invention also encompasses methods of detecting, preventing, diagnosing, prognosticating, treating, and/or ameliorating a gastrointestinal disease or disorder; comprising administering to a patient combinations of the proteins, nucleic acids, or antibodies of the invention (or fragments or variants thereof), sharing similar indications as shown in the corresponding rows in Column 3 of Table 1D.

10 Table 1D provides information related to biological activities for polynucleotides and polypeptides of the invention (including antibodies, agonists, and/or antagonists thereof). Table 1D also provides information related to assays which may be used to test polynucleotides and polypeptides of the invention (including antibodies, agonists, and/or antagonists thereof) for the corresponding biological activities. The first column ("Gene No.") provides the gene number in
15 the application for each clone identifier. The second column ("cDNA Clone ID:") provides the unique clone identifier for each clone as previously described and indicated in Table 1A through Table 1D. The third column ("AA SEQ ID NO:Y") indicates the Sequence Listing SEQ ID Number for polypeptide sequences encoded by the corresponding cDNA clones (also as indicated in Tables 1A, Table 1B, and Table 2). The fourth column ("Biological Activity") indicates a
20 biological activity corresponding to the indicated polypeptides (or polynucleotides encoding said polypeptides). The fifth column ("Exemplary Activity Assay") further describes the corresponding biological activity and also provides information pertaining to the various types of assays which may be performed to test, demonstrate, or quantify the corresponding biological activity.

Table 1D describes the use of, inter alia, FMAT technology for testing or demonstrating
25 various biological activities. Fluorometric microvolume assay technology (FMAT) is a fluorescence-based system which provides a means to perform nonradioactive cell- and bead-based assays to detect activation of cell signal transduction pathways. This technology was designed specifically for ligand binding and immunological assays. Using this technology, fluorescent cells or beads at the bottom of the well are detected as localized areas of concentrated
30 fluorescence using a data processing system. Unbound fluorphore comprising the background signal is ignored, allowing for a wide variety of homogeneous assays. FMAT technology may be used for peptide ligand binding assays, immunofluorescence, apoptosis, cytotoxicity, and bead-based immunocapture assays. See, Miraglia S et. al., "Homogeneous cell and bead based assays for hightroughput screening using flourometric microvolume assay technology," Journal of
35 Biomolecular Screening; 4:193-204 (1999). In particular, FMAT technology may be used to test,

confirm, and/or identify the ability of polypeptides (including polypeptide fragments and variants) to activate signal transduction pathways. For example, FMAT technology may be used to test, confirm, and/or identify the ability of polypeptides to upregulate production of immunomodulatory proteins (such as, for example, interleukins, GM-CSF, Rantes, and Tumor Necrosis factors, as well
5 as other cellular regulators (e.g. insulin)).

Table 1D also describes the use of kinase assays for testing, demonstrating, or quantifying biological activity. In this regard, the phosphorylation and de-phosphorylation of specific amino acid residues (e.g. Tyrosine, Serine, Threonine) on cell-signal transduction proteins provides a fast,
10 reversible means for activation and de-activation of cellular signal transduction pathways. Moreover, cell signal transduction via phosphorylation/de-phosphorylation is crucial to the regulation of a wide variety of cellular processes (e.g. proliferation, differentiation, migration, apoptosis, etc.). Accordingly, kinase assays provide a powerful tool useful for testing, confirming, and/or identifying polypeptides (including polypeptide fragments and variants) that mediate cell
15 signal transduction events via protein phosphorylation. See e.g., Forrer, P., Tamaskovic R., and Jaussi, R. "Enzyme-Linked Immunosorbent Assay for Measurement of JNK, ERK, and p38 Kinase Activities" Biol. Chem. 379(8-9): 1101-1110 (1998).

Table 1D

Gene No.	cDNA Clone ID	AA SEQ ID NO: Y	Biological Activity	Exemplary Activity Assay
1	H2CBU83	300	Stimulation of insulin secretion from pancreatic beta cells.	Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li, M., et al., Endocrinology, 138(9):3735-40 (1997); Kim, K.H., et al., FEBS Lett, 377(2):237-9 (1995); and, Miraglia S et. al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. Endocrinology 1992 130:167.
2	H6EDC19	301	Regulation of viability and proliferation of pancreatic beta cells.	Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Friedrichsen BN, et al., Mol Endocrinol, 15(1):136-48 (2001); Huotari MA, et al., Endocrinology, 139(4):1494-9 (1998); Hugl SR, et al., J Biol Chem 1998 Jul 10;273(28):17771-9 (1998), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that

3	HACBD91	302	<p>may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>Assays for the activation of transcription through the cAMP response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to increase cAMP, regulate CREB transcription factors, and modulate expression of genes involved in a wide variety of cell functions. For example, a 3T3-L1/CRE reporter assay may be used to identify factors that activate the cAMP signaling pathway. CREB plays a major role in adipogenesis, and is involved in differentiation into adipocytes. CRE contains the binding sequence for the transcription factor CREB (CRE binding protein). Exemplary assays for transcription through the cAMP response element that may be used or routinely modified to test cAMP-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); Reusch et al., <i>Mol Cell Biol</i> 20(3):1008-1020 (2000); and Klemm et al., <i>J Biol Chem</i> 273:917-923 (1998), the contents of each of which are herein incorporated by reference in its entirety. Pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.</p>
3	HACBD91	302	<p>Assays for the activation of transcription through the cAMP response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to increase cAMP and regulate CREB transcription factors, and modulate expression of genes involved in a wide variety of cell functions. Exemplary assays for transcription through the cAMP response element that may be used or routinely modified to test cAMP-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); Black et al., <i>Virus Genes</i> 15(2):105-117 (1997); and Belkowski et al., <i>J Immunol</i> 161(2):659-665 (1998), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell</p>

3	HACBD91	302	Production of IL-6	<p>line, which is a suspension culture of IL-2 dependent cytotoxic T cells.</p> <p>IL-6 F/MAT. IL-6 is produced by T cells and has strong effects on B cells. IL-6 participates in IL-4 induced IgE production and increases IgA production (IgA plays a role in mucosal immunity). IL-6 induces cytotoxic T cells. Deregulated expression of IL-6 has been linked to autoimmune disease, plasmacytomas, myelomas, and chronic hyperproliferative diseases. Assays for immunomodulatory and differentiation factor proteins produced by a large variety of cells where the expression level is strongly regulated by cytokines, growth factors, and hormones are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation and differentiation and modulate T cell proliferation and function. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines, such as IL-6, and the stimulation and upregulation of T cell proliferation and functional activities. Such assays that may be used or routinely modified to test immunomodulatory and differentiation activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); and Verhasselt et al., J Immunol 158:2919-2925 (1997), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.</p> <p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and MEEd identified as putative PPAR response elements. ME promoter may also respond to AP1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeter, R.S., et al., Mol Endocrinol, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., Mol Endocrinol, 8(10):1361-9 (1994); Barroso, I., et al., J Biol Chem, 274(25):17997-8004 (1999); Ijpenberg, A., et al., J Biol Chem, 272(32):20108-20117 (1997); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely</p>
3	HACBD91	302	Regulation of transcription of Malic Enzyme in adipocytes	<p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and MEEd identified as putative PPAR response elements. ME promoter may also respond to AP1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeter, R.S., et al., Mol Endocrinol, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., Mol Endocrinol, 8(10):1361-9 (1994); Barroso, I., et al., J Biol Chem, 274(25):17997-8004 (1999); Ijpenberg, A., et al., J Biol Chem, 272(32):20108-20117 (1997); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely</p>

3	HACBD91	302	Activation of Endothelial Cell p38 or JNK Signaling Pathway.	<p>generated. Exemplary hepatocytes that may be used according to these assays includes the H4IIE rat liver hepatoma cell line.</p> <p>Kinase assay. JNK and p38 kinase assays for signal transduction that regulate cell proliferation, activation, or apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit cell proliferation, activation, and apoptosis. Exemplary assays for JNK and p38 kinase activity that may be used or routinely modified to test JNK and p38 kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Fortier et al., Biol Chem 379(8-9):1101-1110 (1998); Gupta et al., Exp Cell Res 247(2): 495-504 (1999); Kyriakis JM, Biochem Soc Symp 64:29-48 (1999); Chang and Karin, Nature 410(6824):37-40 (2001); and Cobb MH, Prog Biophys Mol Biol 71(3-4):479-500 (1999); the contents of each of which are herein incorporated by reference in its entirety. Endothelial cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary endothelial cells that may be used according to these assays include human umbilical vein endothelial cells (HUVVEC), which are endothelial cells which line venous blood vessels, and are involved in functions that include, but are not limited to, angiogenesis, vascular permeability, vascular tone, and immune cell extravasation.</p> <p>Assays for the activation of transcription through the CD28 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate IL-2 expression in T cells.</p> <p>Exemplary assays for transcription through the CD28 response element that may be used or routinely modified to test CD28-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); McGuire and Iacobelli, J Immunol 159(3):1319-1327 (1997); Parra et al., J Immunol 166(4):2437-2443 (2001); and Butscher et al., J Biol Chem 3(1):552-560 (1998), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the JURKAT cell line, which is a suspension culture of leukemia cells that produce IL-2 when stimulated.</p> <p>Assays for the activation of transcription through the AP1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to modulate growth and other cell functions.</p> <p>Exemplary assays for transcription through the AP1 response element that may be used or routinely modified to test AP1-response element activity of polypeptides of the invention (including antibodies and</p>
3	HACBD91	302	Activation of transcription through CD28 response element in immune cells (such as T-cells).	
3	HACBD91	302	Activation of transcription through AP1 response element in	

3	HACBD91	302	immune cells (such as T-cells).	agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1988); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Rellahan et al., J Biol Chem 272(49):30806-30811 (1997); Chang et al., Mol Cell Biol 18(9):4986-4993 (1998); and Fraser et al., Eur J Immunol 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. Human T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the SUPT cell line, which is an IL-2 and IL-4 responsive suspension-culture cell line.
3	HACBD91	302	Activation of transcription through CD28 response element in immune cells (such as T-cells).	Assays for the activation of transcription through the CD28 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate IL-2 expression in T cells. Exemplary assays for transcription through the CD28 response element that may be used or routinely modified to test CD28-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1988); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); McGuire and Iacobelli, J Immunol 159(3):1319-1327 (1997); Parra et al., J Immunol 166(4):2437-2443 (2001); and Butscher et al., J Biol Chem 273(1):552-560 (1998), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the SUPT cell line, which is a suspension culture of IL-2 and IL-4 responsive T cells.
3	HACBD91	302	Activation of transcription through NFAT response element in immune cells (such as T-cells).	Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions. Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1988); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Serfling et al., Biochim Biophys Acta 1498(1):1-18 (2000); De Boer et al., Int J Biochem Cell Biol 31(10):1221-1236 (1999); Fraser et al., Eur J Immunol 29(3):838-844 (1999); and Yeseen et al., J Biol Chem 268(19):14285-14293 (1993), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to

3	HACBD91	302	Activation of transcription through STAT6 response element in immune cells (such as T-cells).	<p>these assays include the SUPT cell line, which is a suspension culture of IL-2 and IL-4 responsive T cells.</p> <p>Assays for the activation of transcription through the Signal Transducers and Activators of Transcription (STAT6) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate STAT6 transcription factors and modulate the expression of multiple genes. Exemplary assays for transcription through the STAT6 response element that may be used or routinely modified to test STAT6 response element activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Georas et al., Blood 92(12):4529-4538 (1998); Moffatt et al., Transplantation 69(7):1521-1523 (2000); Curiel et al., Eur J Immunol 27(8):1982-1987 (1997); and Masuda et al., J Biol Chem 275(38):29331-29337 (2000), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary T cells that may be used according to these assays include the SUPT cell line, which is a suspension culture of IL-2 and IL-4 responsive T cells.</p> <p>Assays for the activation of transcription through the NFkB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFkB transcription factors and modulate expression of immunomodulatory genes. Exemplary assays for transcription through the NFkB response element that may be used or routinely modified to test NFkB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Black et al., Virus Gnes 15(2):105-117 (1997); and Fraser et al., 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the SUPT cell line, which is a suspension culture of IL-2 and IL-4 responsive T cells.</p> <p>Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions. Exemplary assays for transcription through the NFAT response element that may be used or</p>
3	HACBD91	302	Activation of transcription through NFkB response element in immune cells (such as T-cells).	
3	HACBD91	302	Activation of transcription through NFAT response element in	

			immune cells (such as natural killer cells).	<p>routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Aramburu et al., J Exp Med 182(3):801-810 (1995); De Boer et al., Int J Biochem Cell Biol 31(10):1221-1236 (1999); Fraser et al., Eur J Immunol 29(3):838-844 (1999); and Yeseen et al., J Biol Chem 268(19):14285-14293 (1993), the contents of each of which are herein incorporated by reference in its entirety. NK cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human NK cells that may be used according to these assays include the NK-YT cell line, which is a human natural killer cell line with cytolytic and cytotoxic activity.</p>
3	HACBD91	302	Activation of transcription through serum response element in immune cells (such as natural killer cells).	<p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate serum response factors and modulate the expression of genes involved in growth and upregulate the function of growth-related genes in many cell types. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Benson et al., J Immunol 153(9):3862-3873 (1994); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary T cells that may be used according to these assays include the NK-YT cell line, which is a human natural killer cell line with cytolytic and cytotoxic activity.</p>
4	HAGAQ26	303	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li, M., et al., Endocrinology, 138(9):3735-40 (1997); Kim, K.H., et al., FEBS Lett, 377(2):237-9 (1995); and, Miraglia S et al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to</p>

5	HAGDS35	304	Regulation of transcription via DMEF1 response element in adipocytes and pre-adipocytes	<p>these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>Assays for the regulation of transcription through the DMEF1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the DMEF1 response element in a reporter construct (such as that containing the GLUT4 promoter) and to regulate insulin production. The DMEF1 response element is present in the GLUT4 promoter and binds to MEF2 transcription factor and another transcription factor that is required for insulin regulation of Glut4 expression in skeletal muscle. GLUT4 is the primary insulin-responsive glucose transporter in fat and muscle tissue. Exemplary assays that may be used or routinely modified to test for DMEF1 response element activity (in adipocytes and pre-adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Thai, M.V., et al., <i>J Biol Chem</i>, 273(23):14285-92 (1998); Mora, S., et al., <i>J Biol Chem</i>, 275(21):16323-8 (2000); Liu, M.L., et al., <i>J Biol Chem</i>, 269(45):28514-21 (1994); "Identification of a 30-base pair regulatory element and novel DNA binding protein that regulates the human GLUT4 promoter in transgenic mice", <i>J Biol Chem</i>, 2000 Aug 4;275(31):23666-73; Berger, et al., <i>Gene</i> 66:1-10 (1988); and, Cullen, B., et al., <i>Methods in Enzymol.</i> 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Adipocytes and pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include the mouse 3T3-L1 cell line which is an adherent mouse preadipocyte cell line. Mouse 3T3-L1 cells are a continuous substrain of 3T3 fibroblasts developed through clonal isolation. These cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p> <p>Assays for measuring calcium flux are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mobilize calcium. For example, the FLPR assay may be used to measure influx of calcium. Cells normally have very low concentrations of cytosolic calcium compared to much higher extracellular calcium. Extracellular factors can cause an influx of calcium, leading to activation of calcium responsive signaling pathways and alterations in cell functions. Exemplary assays that may be used or routinely modified to measure calcium flux by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Satin LS, et al., <i>Endocrinology</i>, 136(10):4589-601 (1995); Mogami H, et al., <i>Endocrinology</i>, 136(7):2960-6 (1995); Richardson SB, et al., <i>Biochem J</i>,</p>
6	HAJAN23	305	Stimulation of Calcium Flux in pancreatic beta cells.	

				<p>288 (Pt 3):847-51 (1992); and, Meats, JE, et al., Cell Calcium 1989 Nov-Dec;10(8):535-41 (1989), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p>
7	HABR69	306	Regulation of transcription through the PEPCK promoter in hepatocytes	<p>Assays for the regulation of transcription through the PEPCK promoter are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the PEPCK promoter in a reporter construct and regulate liver gluconeogenesis. Exemplary assays for regulation of transcription through the PEPCK promoter that may be used or routinely modified to test for PEPCK promoter activity (in hepatocytes) of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Lochhead et al., Diabetes 49(6):896-903 (2000); and Yeagley et al., J Biol Chem 275(23):17814-17820 (2000), the contents of each of which is herein incorporated by reference in its entirety. Hepatocyte cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary liver hepatoma cells that may be used according to these assays include H4Ile cells, which contain a tyrosine amino transferase that is inducible with glucocorticoids, insulin, or cAMP derivatives.</p>
7	HABR69	306	Production of GM-CSF	<p>GM-CSF FMT. GM-CSF is expressed by activated T cells, macrophages, endothelial cells, and fibroblasts. GM-CSF regulates differentiation and proliferation of granulocytes- macrophage progenitors and enhances antimicrobial activity in neutrophils, monocytes and macrophage. Additionally, GM-CSF plays an important role in the differentiation of dendritic cells and monocytes, and increases antigen presentation. GM-CSF is considered to be a proinflammatory cytokine. Assays for immunomodulatory proteins that promote the production of GM-CSF are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation and modulate the growth and differentiation of leukocytes. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines, such as GM-CSF, and the activation of T cells. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and</p>

8	HAMFE15	307	Regulation of transcription via DMEF1 response element in adipocytes and pre-adipocytes	<p>agonists or antagonists of the invention) include the assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204 (1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); and Ye et al., J Leukoc Biol (58(2):225-233, the contents of each of which are herein incorporated by reference in its entirety. Natural killer cells that may be used according to these assays are publicly available (e.g., through the ATCC) or may be isolated using techniques disclosed herein or otherwise known in the art. Natural killer (NK) cells are large granular lymphocytes that have cytotoxic activity but do not bind antigen. NK cells show antibody-independent killing of tumor cells and also recognize antibody bound on target cells, via NK Fc receptors, leading to cell-mediated cytotoxicity.</p> <p>Assays for the regulation of transcription through the DMEF1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the DMEF1 response element in a reporter construct (such as that containing the GLUT4 promoter) and to regulate insulin production. The DMEF1 response element is present in the GLUT4 promoter and binds to MEF2 transcription factor and another transcription factor that is required for insulin regulation of Glut4 expression in skeletal muscle. GLUT4 is the primary insulin-responsive glucose transporter in fat and muscle tissue. Exemplary assays that may be used or routinely modified to test for DMEF1 response element activity (in adipocytes and pre-adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Thai, M.V., et al., J Biol Chem, 273(23):14285-92 (1998); Mora, S., et al., J Biol Chem, 275(21):16323-8 (2000); Liu, M.L., et al., J Biol Chem, 269(45):28514-21 (1994); "Identification of a 30-base pair regulatory element and novel DNA binding protein that regulates the human GLUT4 promoter in transgenic mice", J Biol Chem. 2000 Aug 4;275(31):23666-73; Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Adipocytes and pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include the mouse 3T3-L1 cell line which is an adherent mouse preadipocyte cell line. Mouse 3T3-L1 cells are a continuous substrain of 3T3 fibroblasts developed through clonal isolation. These cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p> <p>Assays for measuring calcium flux are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mobilize calcium. For example, the FLPR assay may be used to measure influx of calcium. Cells normally have very low concentrations of cytosolic calcium compared to much higher extracellular calcium. Extracellular factors can cause an influx of calcium, leading to activation of calcium responsive signaling pathways and alterations in cell functions. Exemplary assays that may be used or routinely</p>
9	HAMGR28	308	Stimulation of Calcium Flux in pancreatic beta cells.	

			<p>modified to measure calcium flux by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Satin LS, et al., <i>Endocrinology</i>, 136(10):4589-601 (1995); Mogami H, et al., <i>Endocrinology</i>, 136(7):2960-6 (1995); Richardson SB, et al., <i>Biochem J</i>, 288 (Pt 3):847-51 (1992); and, Meats, JE, et al., <i>Cell Calcium</i> 1989 Nov-Dec;10(8):535-41 (1989), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATCC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J</i> 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p>
10	HAPOM49	309	<p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Friedrichsen BN, et al., <i>Mol Endocrinol</i>, 15(1):136-48 (2001); Huotari MA, et al., <i>Endocrinology</i>, 139(4):1494-9 (1998); Hugi SR, et al., <i>J Biol Chem</i> 1998 Jul 10;273(28):17771-9 (1998), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p>
11	HATBR65	310	<p>IL-6 FMA.T. IL-6 is produced by T cells and has strong effects on B cells. IL-6 participates in IL-4 induced IgE production and increases IgA production (IgA plays a role in mucosal immunity). IL-6 induces cytotoxic T cells. Deregulated expression of IL-6 has been linked to autoimmune disease, plasmacytomas, myelomas, and chronic hyperproliferative diseases. Assays for immunomodulatory and differentiation factor proteins produced by a large variety of cells where the expression level is strongly regulated by cytokines, growth factors, and hormones are well known in the art and may be used or</p>

11	HATBR65	310	Regulation of transcription of Malic Enzyme in adipocytes	<p>routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation and differentiation and modulate T cell proliferation and function. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines, such as IL-6, and the stimulation and upregulation of T cell proliferation and functional activities. Such assays that may be used or routinely modified to test immunomodulatory and differentiation activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); and Verhasselt et al., J Immunol 158:2919-2925 (1997), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.</p> <p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and ME₂ identified as putative PPAR response elements. ME promoter may also respond to AP1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeter, R.S., et al., Mol Endocrinol, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., Mol Endocrinol, 8(10):1361-9 (1994); Barroso, I., et al., J Biol Chem, 274(25):17997-8004 (1999); Ijpenberg, A., et al., J Biol Chem, 272(32):20108-20117 (1997); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays includes the H4IIE rat liver hepatoma cell line.</p>
12	HAUAJ83	311	Insulin Secretion	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes.</p>

			<p>Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., <i>Endocr J</i>, 47(3):261-9 (2000); Salapatek, A.M., et al., <i>Mol Endocrinol</i>, 13(8):1305-17 (1999); Filipsson, K., et al., <i>Ann N Y Acad Sci</i>, 865:441-4 (1998); Olson, L.K., et al., <i>J Biol Chem</i>, 271(28):16544-52 (1996); and, Miraglia S et. al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J.</i> 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p>
13	HBAMB15	312	<p>Stimulation of insulin secretion from pancreatic beta cells.</p>
14	HBGBA69	313	<p>Regulation of viability and proliferation of pancreatic beta cells.</p>

15	HBIAE26	314	Insulin Secretion	<p>active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Friedrichsen BN, et al., Mol Endocrinol, 15(1):136-48 (2001); Huotari MA, et al., Endocrinology, 139(4):1494-9 (1998); Hugi SR, et al., J Biol Chem 1998 Jul 10;273(28):17771-9 (1998), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion.</p> <p>References: Asfari et al. Endocrinology 1992 130:167.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes.</p> <p>Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., Endocr J, 47(3):261-9 (2000); Salapatek, A.M., et al., Mol Endocrinol, 13(8):1305-17 (1999); Filipsson, K., et al., Ann N Y Acad Sci, 865:441-4 (1998); Olson, L.K., et al., J Biol Chem, 271(28):16544-52 (1996); and, Miraglia S et al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATCC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p> <p>TNFα FMAT. Assays for immunomodulatory proteins produced by activated macrophages, T cells, fibroblasts, smooth muscle, and other cell types that exert a wide variety of inflammatory and cytotoxic effects on a variety of cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation, modulate inflammation and cytotoxicity. Exemplary assays that test for</p>
16	HBINS58	315	Production of TNF alpha by dendritic cells	

				immunomodulatory proteins evaluate the production of cytokines such as tumor necrosis factor alpha (TNF α), and the induction or inhibition of an inflammatory or cytotoxic response. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); Verhasselt et al., Eur J Immunol 28(11):3886-3890 (1998); Dahlen et al., J Immunol 160(7):3585-3593 (1998); Verhasselt et al., J Immunol 158:2919-2925 (1997); and Nardelli et al., J Leukoc Biol 65:822-828 (1999), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.
16	HBINS58	315	Insulin Secretion	Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., Endocr J, 47(3):261-9 (2000); Salapatek, A.M., et al., Mol Endocrinol, 13(8):1305-17 (1999); Filipsson, K., et al., Ann N Y Acad Sci, 865:441-4 (1998); Olson, L.K., et al., J Biol Chem, 271(28):16544-52 (1996); and, Miraglia S et al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATCC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.
17	HBNAW17	316	Activation of transcription through serum response	Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate the serum response factors and modulate the expression of genes involved in growth. Exemplary assays for transcription through

17	HBNAW17	316	Insulin Secretion	<p>the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell line, which is an IL-2 dependent suspension culture of T cells with cytotoxic activity.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., Endocr J, 47(3):261-9 (2000); Salapatek, A.M., et al., Mol Endocrinol, 13(8):1305-17 (1999); Filipsson, K., et al., Ann N Y Acad Sci, 865:441-4 (1998); Olson, L.K., et al., J Biol Chem, 271(28):16544-52 (1996); and, Miraglia S et al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft, Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p>
18	HCE2F54	317	Regulation of transcription through the PEPCK promoter in hepatocytes	<p>Assays for the regulation of transcription through the PEPCK promoter are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the PEPCK promoter in a reporter construct and regulate liver gluconeogenesis. Exemplary assays for regulation of transcription through the PEPCK promoter that may be used or routinely modified to test for PEPCK promoter activity (in hepatocytes) of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Lochhead</p>

18	HCE2F54	317	Activation of transcription through NFKB response element in epithelial cells (such as HELA cells).	<p>et al., Diabetes 49(6):896-903 (2000); and Yeagley et al., J Biol Chem 275(23):17814-17820 (2000), the contents of each of which is herein incorporated by reference in its entirety. Hepatocyte cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary liver hepatoma cells that may be used according to these assays include H4Ile cells, which contain a tyrosine amino transferase that is inducible with glucocorticoids, insulin, or cAMP derivatives.</p> <p>Assays for the activation of transcription through the NFKB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFKB transcription factors and modulate expression of epithelial genes. Exemplary assays for transcription through the NFKB response element that may be used or routinely modified to test NFKB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Kalschmidt B, et al., Oncogene, 18(21):3213-3225 (1999); Beetz A, et al., Int J Radiat Biol, 76(11):1443-1453 (2000); Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Valle Blazquez et al, Immunology 90(3):455-460 (1997); Aramburau et al., J Exp Med 82(3):801-810 (1995); and Fraser et al., 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. Epithelial cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary epithelial cells that may be used according to these assays include the HELA cell line.</p>
18	HCE2F54	317	Activation of transcription through NFKB response element in immune cells (such as the U937 human monocyte cell line).	<p>This assay uses a NFKB response element (which will bind NFKB transcription factors) linked to a reporter gene to measure NFKB mediated transcription in the human monocyte cell line U937. NFKB is upregulated by cytokines and other factors and NFKB element activation leads to expression of immunomodulatory genes. Activation of NFKB in monocytes can play a role in immune responses. Exemplary assays for transcription through the NFKB response element that may be used or routinely modified to test NFKB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Valle Blazquez et al, Immunology 90(3):455-460 (1997); Aramburau et al., J Exp Med 82(3):801-810 (1995); and Fraser et al., 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. Monocytic cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human monocyte cells that may be used according to these assays include the U937 cell line, which is cell line derived by Sundstrom and Nilsson in 1974 from malignant cells obtained from the pleural effusion of a patient with histiocytic</p>

19	HCE3G69	318	Stimulation of insulin secretion from pancreatic beta cells.	<p>lymphoma.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995); and, Miraglia S et. al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p>
19	HCE3G69	318	Production of IL-10 and activation of T-cells.	<p>Assays for production of IL-10 and activation of T-cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit production of IL-10 and/or activation of T-cells. Exemplary assays that may be used or routinely modified to assess the ability of polypeptides and antibodies of the invention (including agonists or antagonists of the invention) to modulate IL-10 production and/or T-cell proliferation include, for example, assays such as disclosed and/or cited in: Robinson, DS, et al., "Th-2 cytokines in allergic disease" <i>Br Med Bull</i>; 56 (4): 956-968 (2000), and Cohn, et al., "T-helper type 2 cell-directed therapy for asthma" <i>Pharmacology & Therapeutics</i>; 88: 187-196 (2000); the contents of each of which are herein incorporated by reference in their entirety. Exemplary cells that may be used according to these assays include Th2 cells. IL10 secreted from Th2 cells may be measured as a marker of Th2 cell activation. Th2 cells are a class of T cells that secrete IL4, IL10, IL13, IL5 and IL6. Factors that induce differentiation and activation of Th2 cells play a major role in the initiation and pathogenesis of allergy and asthma. Primary T helper 2 cells are generated via in vitro culture under Th2 polarizing conditions using peripheral blood lymphocytes isolated from cord blood.</p>
20	HCE5F43	319	Stimulation of insulin secretion	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or</p>

21	HCEFB80	320	from pancreatic beta cells.	<p>antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>Assays for the activation of transcription through the Gamma Interferon Activation Site (GAS) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate STAT transcription factors and modulate gene expression involved in a wide variety of cell functions. Exemplary assays for transcription through the GAS response element that may be used or routinely modified to test GAS-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); Matikainen et al., <i>Blood</i> 93(6):1980-1991 (1999); and Hentinen et al., <i>J Immunol</i> 155(10):4582-4587 (1995), the contents of each of which are herein incorporated by reference in its entirety. Exemplary mouse T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary T cells that may be used according to these assays include the CTLL cell line, which is a suspension culture of IL-2 dependent cytotoxic T cells.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the</p>
21	HCEFB80	320	Insulin Secretion	<p>Insulin Secretion</p>

22	HCEWE20	321	Regulation of transcription of Malic Enzyme in hepatocytes	<p>invention) include assays disclosed in: Shimizu, H., et al., <i>Endocr J</i>, 47(3):261-9 (2000); Salapatek, A.M., et al., <i>Mol Endocrinol</i>, 13(8):1305-17 (1999); Filipsson, K., et al., <i>Ann N Y Acad Sci</i>, 865:441-4 (1998); Olson, L.K., et al., <i>J Biol Chem</i>, 271(28):16544-52 (1996); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATCC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J</i>. 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p> <p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and MEEd identified as putative PPAR response elements. ME promoter may also respond to AP1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeter, R.S., et al., <i>Mol Endocrinol</i>, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., <i>Mol Endocrinol</i>, 8(10):1361-9 (1994); Barroso, I., et al., <i>J Biol Chem</i>, 274(25):17997-8004 (1999); Ijpenberg, A., et al., <i>J Biol Chem</i>, 272(32):20108-20117 (1997); Berger, et al., <i>Gene</i> 66:1-10 (1988); and, Cullen, B., et al., <i>Methods in Enzymol.</i> 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays includes the mouse 3T3-L1 cell line. 3T3-L1 is a mouse preadipocyte cell line (adherent). It is a continuous substrain of 3T3 fibroblasts developed through clonal isolation. Cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p>
22	HCEWE20	321	Production of ICAM-1	<p>Assays for measuring expression of ICAM-1 are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate ICAM-1 expression. Exemplary assays that may be used or routinely modified to measure ICAM-1 expression include assays disclosed in: Rolfe BE, et al., <i>Atherosclerosis</i>, 149(1):99-110 (2000); Panettieri RA Jr, et al., <i>J Immunol</i>, 154(5):2358-2365 (1995);</p>

23	HCGMD59	322	Insulin Secretion	<p>and, Grunstein MM, et al., <i>Am J Physiol Lung Cell Mol Physiol</i>, 278(6):L1154-L1163 (2000), the contents of each of which is herein incorporated by reference in its entirety. Cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include Aortic Smooth Muscle Cells (AOSMC); such as bovine AOSMC.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., <i>Endocr J</i>, 47(3):261-9 (2000); Salapatek, A.M., et al., <i>Mol Endocrinol</i>, 13(8):1305-17 (1999); Filipsson, K., et al., <i>Ann N Y Acad Sci</i>, 865:441-4 (1998); Olson, L.K., et al., <i>J Biol Chem</i>, 271(28):16544-52 (1996); and, Miraglia S et al.; <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J.</i> 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p> <p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Friedrichsen BN, et al., <i>Mol Endocrinol</i>, 15(1):136-48 (2001); Huotari MA, et al., <i>Endocrinology</i>, 139(4):1494-9 (1998); Hugl SR, et al., <i>J Biol Chem</i> 1998 Jul 10;273(28):17771-9 (1998), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly</p>
24	HCNDR47	323	Regulation of viability and proliferation of pancreatic beta cells.	

25	HCNSM70	324	Myoblast cell proliferation	<p>available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. Endocrinology 1992 130:167.</p> <p>Assays for muscle cell proliferation are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit myoblast cell proliferation. Exemplary assays for myoblast cell proliferation that may be used or routinely modified to test activity of polypeptides and antibodies of the invention (including agonists or antagonists of the invention) include, for example, assays disclosed in: Soeta, C., et al. "Possible role for the c-ski gene in the proliferation of myogenic cells in regenerating skeletal muscles of rats" Dev Growth Differ Apr;43(2):155-64 (2001); Ewton DZ, et al., "IGF binding proteins-4, -5 and -6 may play specialized roles during L6 myoblast proliferation and differentiation" J Endocrinol Mar;144(3):539-53 (1995); and, Pampusch MS, et al., "Effect of transforming growth factor beta on proliferation of L6 and embryonic porcine myogenic cells" J Cell Physiol Jun;143(3):524-8 (1990); the contents of each of which are herein incorporated by reference in their entirety. Exemplary myoblast cells that may be used according to these assays include the rat myoblast L6 cell line. Rat myoblast L6 cells are an adherent rat myoblast cell line, isolated from primary cultures of rat thigh muscle, that fuse to form multinucleated myotubes and striated fibers after culture in differentiation media.</p>
26	HCUTM65	325	Regulation of transcription via DMEF1 response element in adipocytes and pre-adipocytes	<p>Assays for the regulation of transcription through the DMEF1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the DMEF1 response element in a reporter construct (such as that containing the GLUT4 promoter) and to regulate insulin production. The DMEF1 response element is present in the GLUT4 promoter and binds to MEF2 transcription factor and another transcription factor that is required for insulin regulation of Glut4 expression in skeletal muscle. GLUT4 is the primary insulin-responsive glucose transporter in fat and muscle tissue. Exemplary assays that may be used or routinely modified to test for DMEF1 response element activity (in adipocytes and pre-adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Thai, M.V., et al., J Biol Chem, 273(23):14285-92 (1998); Mora, S., et al., J Biol Chem, 275(21):16323-8 (2000); Liu, M.L., et al., J Biol Chem, 269(45):28514-21 (1994); "Identification of a 30-base pair regulatory element and novel DNA binding protein that regulates the human GLUT4 promoter in transgenic mice", J Biol Chem. 2000 Aug 4;275(31):23666-73; Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of</p>

26	HCUIM65	325	Activation of transcription through cAMP response element (CRE) in pre-adipocytes.	<p>each of which is herein incorporated by reference in its entirety. Adipocytes and pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include the mouse 3T3-L1 cell line which is an adherent mouse preadipocyte cell line. Mouse 3T3-L1 cells are a continuous substrain of 3T3 fibroblasts developed through clonal isolation. These cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p> <p>Assays for the activation of transcription through the cAMP response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to increase cAMP, regulate CREB transcription factors, and modulate expression of genes involved in a wide variety of cell functions. For example, a 3T3-L1/CRE reporter assay may be used to identify factors that activate the cAMP signaling pathway. CREB plays a major role in adipogenesis, and is involved in differentiation into adipocytes. CRE contains the binding sequence for the transcription factor CREB (CRE binding protein). Exemplary assays for transcription through the cAMP response element that may be used or routinely modified to test cAMP-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Reusch et al., Mol Cell Biol 20(3):1008-1020 (2000); and Klemm et al., J Biol Chem 273:917-923 (1998), the contents of each of which are herein incorporated by reference in its entirety. Pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.</p> <p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate the serum response factors and modulate the expression of genes involved in growth. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. Pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely</p>
26	HCUIM65	325	Activation of transcription through serum response element in pre-adipocytes.	

26	HCUIM65	325	Stimulation of Calcium Flux in pancreatic beta cells.	<p>generated. Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.</p> <p>Assays for measuring calcium flux are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mobilize calcium. For example, the FLPR assay may be used to measure influx of calcium. Cells normally have very low concentrations of cytosolic calcium compared to much higher extracellular calcium. Extracellular factors can cause an influx of calcium, leading to activation of calcium responsive signaling pathways and alterations in cell functions. Exemplary assays that may be used or routinely modified to measure calcium flux by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Satin LS, et al., <i>Endocrinology</i>, 136(10):4589-601 (1995); Mogami H, et al., <i>Endocrinology</i>, 136(7):2960-6 (1995); Richardson SB, et al., <i>Biochem J</i>, 288 (Pt 3):847-51 (1992); and, Meats, JE, et al., <i>Cell Calcium</i> 1989 Nov-Dec;10(8):535-41 (1989), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J</i> 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p> <p>This reporter assay measures activation of the GATA-3 signaling pathway in HMC-1 human mast cell line. Activation of GATA-3 in mast cells has been linked to cytokine and chemokine production. Assays for the activation of transcription through the GATA3 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate GATA3 transcription factors and modulate expression of mast cell genes important for immune response development. Exemplary assays for transcription through the GATA3 response element that may be used or routinely modified to test GATA3-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); Flavell et al., <i>Cold Spring Harb Symp Quant Biol</i> 64:563-571 (1999); Rodriguez-Palmero et al., <i>Eur J Immunol</i> 29(12):3914-3924 (1999); Zheng and Flavell, <i>Cell</i> 89(4):587-596 (1997); and Henderson</p>
26	HCUIM65	325	Activation of transcription through GATA-3 response element in immune cells (such as mast cells).	

26	HCUIM65	325	<p>et al., Mol Cell Biol 14(6):4286-4294 (1994), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p> <p>This reporter assay measures activation of the NFAT signaling pathway in HMC-1 human mast cell line. Activation of NFAT in mast cells has been linked to cytokine and chemokine production. Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions. Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); De Boer et al., Int J Biochem Cell Biol 31(10):1221-1236 (1999); Ali et al., J Immunol 165(12):7215-7223 (2000); Hutchinson and McCloskey, J Biol Chem 270(27):16333-16338 (1995), and Turner et al., J Exp Med 188:527-537 (1998), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p>
26	HCUIM65	325	<p>This reporter assay measures activation of the NFkB signaling pathway in HMC-1 human mast cell line. Activation of NFkB in mast cells has been linked to production of certain cytokines, such as IL-6 and IL-9. Assays for the activation of transcription through the NFkB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFkB transcription factors and modulate expression of immunomodulatory genes. Exemplary assays for transcription through the NFkB response element that may be used or routinely modified to test NFkB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Stassen et al., J Immunol 166(7):4391-8 (2001); and Marquardt and Walker, J Allergy Clin Immunol 105(3):500-5</p>

26	HCUIM65	325	Activation of transcription through serum response element in immune cells (such as T-cells).	<p>(2000), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p> <p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to bind the serum response factor and modulate the expression of genes involved in growth and upregulate the function of growth-related genes in many cell types. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Benson et al., J Immunol 153(9):3862-3873 (1994); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells, such as the MOL.T4, that may be used according to these assays are publicly available (e.g., through the ATCC).</p>
26	HCUIM65	325	Activation of transcription through STAT6 response element in immune cells (such as natural killer cells).	<p>Assays for the activation of transcription through the Signal Transducers and Activators of Transcription (STAT6) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate STAT6 transcription factors and modulate the expression of multiple genes. Exemplary assays for transcription through the STAT6 response element that may be used or routinely modified to test STAT6 response element activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Georas et al., Blood 92(12):4529-4538 (1998); Moffatt et al., Transplantation 69(7):1521-1523 (2000); Curriel et al., Eur J Immunol 27(8):1982-1987 (1997); and Masuda et al., J Biol Chem 275(38):29331-29337 (2000), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary rat natural killer cells that may be used according to these assays are publicly available (e.g., through the ATCC).</p>
26	HCUIM65	325	Activation of transcription	<p>Assays for the activation of transcription through the Gamma Interferon Activation Site (GAS) response element are well-known in the art and may be used or routinely modified to assess the ability of</p>

26	HCUTM65	325	through GAS response element in immune cells (such as T-cells).	<p>polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate STAT transcription factors and modulate gene expression involved in a wide variety of cell functions. Exemplary assays for transcription through the GAS response element that may be used or routinely modified to test GAS-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Matikainen et al., Blood 93(6):1980-1991 (1999); and Henttinen et al., J Immunol 155(10):4582-4587 (1995), the contents of each of which are herein incorporated by reference in its entirety. Exemplary human T cells, such as the SUPT cell line, that may be used according to these assays are publicly available (e.g., through the ATCC).</p> <p>Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions. Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Aramburu et al., J Exp Med 182(3):801-810 (1995); De Boer et al., Int J Biochem Cell Biol 31(10):1221-1236 (1999); Fraser et al., Eur J Immunol 29(3):838-844 (1999); and Yeseen et al., J Biol Chem 268(19):14285-14293 (1993), the contents of each of which are herein incorporated by reference in its entirety. NK cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human NK cells that may be used according to these assays include the NK-YT cell line, which is a human natural killer cell line with cytolytic and cytotoxic activity.</p> <p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate serum response factors and modulate the expression of genes involved in growth and upregulate the function of growth-related genes in many cell types. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Benson et al., J Immunol 153(9):3862-3873 (1994); and Black et al., Virus Genes 12(2):105-117</p>
26	HCUTM65	325	Activation of transcription through NFAT response element in immune cells (such as natural killer cells).	<p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate serum response factors and modulate the expression of genes involved in growth and upregulate the function of growth-related genes in many cell types. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Benson et al., J Immunol 153(9):3862-3873 (1994); and Black et al., Virus Genes 12(2):105-117</p>

27	HCWDS72	326	Regulation of transcription of Malic Enzyme in adipocytes	<p>(1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary T cells that may be used according to these assays include the NK-YT cell line, which is a human natural killer cell line with cytolytic and cytotoxic activity.</p> <p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DRI)-like elements MEp and ME₂ identified as putative PPAR response elements. ME promoter may also respond to AP1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeter, R.S., et al., Mol Endocrinol, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., Mol Endocrinol, 8(10):1361-9 (1994); Barroso, I., et al., J Biol Chem, 274(25):17997-8004 (1999); Ijpenberg, A., et al., J Biol Chem, 272(32):20108-20117 (1997); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays includes the H4IIE rat liver hepatoma cell line.</p>
28	HCWKC15	327	Regulation of transcription via DMEF1 response element in adipocytes and pre-adipocytes	<p>Assays for the regulation of transcription through the DMEF1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the DMEF1 response element in a reporter construct (such as that containing the GLUT4 promoter) and to regulate insulin production. The DMEF1 response element is present in the GLUT4 promoter and binds to MEF2 transcription factor and another transcription factor that is required for insulin regulation of Glut4 expression in skeletal muscle. GLUT4 is the primary insulin-responsive glucose transporter in fat and muscle tissue. Exemplary assays that may be used or routinely modified to test for DMEF1 response element activity (in adipocytes and pre-adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Thai, M.V., et al., J Biol Chem, 273(23):14285-92 (1998); Mora, S., et al., J Biol Chem, 275(21):16323-8 (2000); Liu, M.L., et al., J Biol Chem, 269(45):28514-21 (1994); "Identification of a 30-base pair regulatory element and novel DNA binding protein that regulates the human GLUT4 promoter in transgenic mice", J Biol Chem. 2000 Aug 4;275(31):23666-73; Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of</p>

28	HCWKC15	327	Activation of transcription through cAMP response element (CRE) in pre-adipocytes.	<p>each of which is herein incorporated by reference in its entirety. Adipocytes and pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include the mouse 3T3-L1 cell line which is an adherent mouse preadipocyte cell line. Mouse 3T3-L1 cells are a continuous substrain of 3T3 fibroblasts developed through clonal isolation. These cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p> <p>Assays for the activation of transcription through the cAMP response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to increase cAMP, regulate CREB transcription factors, and modulate expression of genes involved in a wide variety of cell functions. For example, a 3T3-L1/CRE reporter assay may be used to identify factors that activate the cAMP signaling pathway. CREB plays a major role in adipogenesis, and is involved in differentiation into adipocytes. CRE contains the binding sequence for the transcription factor CREB (CRE binding protein). Exemplary assays for transcription through the cAMP response element that may be used or routinely modified to test cAMP-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Reusch et al., Mol Cell Biol 20(3):1008-1020 (2000); and Klemm et al., J Biol Chem 273:917-923 (1998), the contents of each of which are herein incorporated by reference in its entirety. Pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.</p> <p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate the serum response factors and modulate the expression of genes involved in growth. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. Pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely</p>
28	HCWKC15	327	Activation of transcription through serum response element in pre-adipocytes.	<p>each of which is herein incorporated by reference in its entirety. Adipocytes and pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include the mouse 3T3-L1 cell line which is an adherent mouse preadipocyte cell line. Mouse 3T3-L1 cells are a continuous substrain of 3T3 fibroblasts developed through clonal isolation. These cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p> <p>Assays for the activation of transcription through the cAMP response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to increase cAMP, regulate CREB transcription factors, and modulate expression of genes involved in a wide variety of cell functions. For example, a 3T3-L1/CRE reporter assay may be used to identify factors that activate the cAMP signaling pathway. CREB plays a major role in adipogenesis, and is involved in differentiation into adipocytes. CRE contains the binding sequence for the transcription factor CREB (CRE binding protein). Exemplary assays for transcription through the cAMP response element that may be used or routinely modified to test cAMP-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Reusch et al., Mol Cell Biol 20(3):1008-1020 (2000); and Klemm et al., J Biol Chem 273:917-923 (1998), the contents of each of which are herein incorporated by reference in its entirety. Pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.</p> <p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate the serum response factors and modulate the expression of genes involved in growth. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. Pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely</p>

28	HCWKC15	327	<p>generated. Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.</p> <p>Assays for the activation of transcription through the Gamma Interferon Activation Site (GAS) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to modulate gene expression (commonly via STAT transduction factors) involved in a wide variety of cell functions. Exemplary assays for transcription through the GAS response element that may be used or routinely modified to test GAS-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); Matikainen et al., <i>Blood</i> 93(6):1980-1991 (1999); and Hentinen et al., <i>J Immunol</i> 155(10):4582-4587 (1995); the contents of each of which are herein incorporated by reference in its entirety. Moreover, exemplary assays that may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate or inhibit activation of immune cells include assays disclosed and/or cited in: Mayumi M., "EoL-1, a human eosinophilic cell line" <i>Leuk Lymphoma</i>; Jun;7(3):243-50 (1992); Bhattacharya S., "Granulocyte macrophage colony-stimulating factor and interleukin-5 activate STAT5 and induce CIS1 mRNA in human peripheral blood eosinophils" <i>Am J Respir Cell Mol Biol</i>; Mar;24(3):312-6 (2001); and, Du J, et al., "Engagement of the CrkL adapter in interleukin-5 signaling in eosinophils" <i>J Biol Chem</i>; Oct 20;275(42):33167-75 (2000); the contents of each of which are herein incorporated by reference in its entirety. Exemplary cells that may be used according to these assays include eosinophils. Eosinophils are a type of immune cell important in the late stage of allergic reactions; they are recruited to tissues and mediate the inflammatory response of late stage allergic reaction. Increases in GAS mediated transcription in eosinophils is typically a result of STAT activation, normally a direct consequence of interleukin or other cytokine receptor stimulation (e.g. IL3, IL5 or GM-CSF).</p>
28	HCWKC15	327	<p>Assays for the activation of transcription through the NFKB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFKB transcription factors and modulate expression of immunomodulatory genes. Exemplary assays for transcription through the NFKB response element that may be used or routinely modified to test NFKB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention)</p>

			(such as EOL1 cells).	include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Valle Blazquez et al., Immunology 90(3):455-460 (1997); Aramburau et al., J Exp Med 82(3):801-810 (1995); and Fraser et al., 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. For example, a reporter assay (which measures increases in transcription inducible from a NFkB responsive element in EOL-1 cells) may link the NFkB element to a reporter gene and binds to the NFkB transcription factor, which is upregulated by cytokines and other factors. Exemplary immune cells that may be used according to these assays include eosinophils such as the human EOL-1 cell line of eosinophils. Eosinophils are a type of immune cell important in the allergic responses; they are recruited to tissues and mediate the inflammatory response of late stage allergic reaction. Eol-1 is a human eosinophil cell line.
28	HCWKC15	327	Activation of transcription through GATA-3 response element in immune cells (such as mast cells).	This reporter assay measures activation of the GATA-3 signaling pathway in HMC-1 human mast cell line. Activation of GATA-3 in mast cells has been linked to cytokine and chemokine production. Assays for the activation of transcription through the GATA3 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate GATA3 transcription factors and modulate expression of mast cell genes important for immune response development. Exemplary assays for transcription through the GATA3 response element that may be used or routinely modified to test GATA3-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Flavell et al., Cold Spring Harb Symp Quant Biol 64:563-571 (1999); Rodriguez-Palmero et al., Eur J Immunol 29(12):3914-3924 (1999); Zheng and Flavell, Cell 89(4):587-596 (1997); and Henderson et al., Mol Cell Biol 14(6):4286-4294 (1994), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.
28	HCWKC15	327	Activation of transcription through NFAT response element in immune cells	This reporter assay measures activation of the NFAT signaling pathway in HMC-1 human mast cell line. Activation of NFAT in mast cells has been linked to cytokine and chemokine production. Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions.

			(such as mast cells).	Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); De Boer et al., Int J Biochem Cell Biol 31(10):1221-1236 (1999); Ali et al., J Immunol 165(12):7215-7223 (2000); Hutchinson and McCloskey, J Biol Chem 270(27):16333-16338 (1995), and Turner et al., J Exp Med 188:527-537 (1998), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.
28	HCWKC15	327	Activation of transcription through NFkB response element in immune cells (such as mast cells).	This reporter assay measures activation of the NFkB signaling pathway in HMC-1 human mast cell line. Activation of NFkB in mast cells has been linked to production of certain cytokines, such as IL-6 and IL-9. Assays for the activation of transcription through the NFkB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFkB transcription factors and modulate expression of immunomodulatory genes. Exemplary assays for transcription through the NFkB response element that may be used or routinely modified to test NFkB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Stassen et al., J Immunol 166(7):4391-8 (2001); and Marquardt and Walker, J Allergy Clin Immunol 105(3):500-5 (2000), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.
28	HCWKC15	327	Activation of transcription through STAT6 response element in immune cells	Assays for the activation of transcription through the Signal Transducers and Activators of Transcription (STAT6) response element in immune cells (such as in the human HMC-1 mast cell line) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate STAT6 transcription factors and modulate the expression of multiple genes. Exemplary assays for transcription through the STAT6 response element that may be used or routinely modified to test STAT6 response element activity

			(such as mast cells).	of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Sherman, Immunol Rev 179:48-56 (2001); Malaviya and Uckun, J Immunol 168:421-426 (2002); Masuda et al., J Biol Chem 275(38):29331-29337 (2000); and Masuda et al., J Biol Chem 276:26107-26113 (2001), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.
28	HCWKC15	327	Activation of transcription through NFKB response element in immune cells (such as basophils).	This reporter assay measures activation of the NFkB signaling pathway in Ku812 human basophil cell line. Assays for the activation of transcription through the NFKB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFKB transcription factors and modulate expression of immunomodulatory genes. Exemplary assays for transcription through the NFKB response element that may be used or routinely modified to test NFKB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Marone et al., Int Arch Allergy Immunol 114(3):207-17 (1997), the contents of each of which are herein incorporated by reference in its entirety. Basophils that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human basophil cell lines that may be used according to these assays include Ku812, originally established from a patient with chronic myelogenous leukemia. It is an immature prebasophilic cell line that can be induced to differentiate into mature basophils.
28	HCWKC15	327	Activation of transcription through serum response element in immune cells (such as T-cells).	Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to bind the serum response factor and modulate the expression of genes involved in growth and upregulate the function of growth-related genes in many cell types. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Benson et al., J Immunol 153(9):3862-3873 (1994); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may

28	HCWKC15	327	Activation of transcription through NFKB response element in immune cells (such as natural killer cells).	<p>be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells, such as the MOLT4, that may be used according to these assays are publicly available (e.g., through the ATCC).</p> <p>Assays for the activation of transcription through the NFKB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFKB transcription through the modulate expression of immunomodulatory genes. Exemplary assays for transcription through the NFKB response element that may be used or routinely modified to test NFKB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Valle Blazquez et al., Immunology 90(3):455-460 (1997); Aramburu et al., J Exp Med 82(3):801-810 (1995); and Fraser et al., 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. NK cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary NK cells that may be used according to these assays include the NK-YT cell line, which is a human natural killer cell line with cytolytic and cytotoxic activity.</p>
28	HCWKC15	327	Activation of transcription through STAT6 response element in immune cells (such as natural killer cells).	<p>Assays for the activation of transcription through the Signal Transducers and Activators of Transcription (STAT6) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate STAT6 transcription factors and modulate the expression of multiple genes. Exemplary assays for transcription through the STAT6 response element that may be used or routinely modified to test STAT6 response element activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Georas et al., Blood 92(12):4529-4538 (1998); Moffatt et al., Transplantation 69(7):1521-1523 (2000); Curriel et al., Eur J Immunol 27(8):1982-1987 (1997); and Masuda et al., J Biol Chem 275(38):29331-29337 (2000), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary rat natural killer cells that may be used according to these assays are publicly available (e.g., through the ATCC).</p>
28	HCWKC15	327	Activation of transcription through API response	<p>Assays for the activation of transcription through the API response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to modulate growth and other cell functions. Exemplary assays for transcription through the API response element that may be used or routinely</p>

28	HCWKC15	327	element in immune cells (such as T-cells).	<p>modified to test API-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1988); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Rellahan et al., J Biol Chem 272(49):30806-30811 (1997); Chang et al., Mol Cell Biol 18(9):4986-4993 (1998); and Fraser et al., Eur J Immunol 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. Human T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the SUPT cell line, which is an IL-2 and IL-4 responsive suspension-culture cell line.</p> <p>Assays for the activation of transcription through the CD28 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate IL-2 expression in T cells. Exemplary assays for transcription through the CD28 response element that may be used or routinely modified to test CD28-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1988); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); McGuire and Iacobelli, J Immunol 159(3):1319-1327 (1997); Parra et al., J Immunol 166(4):2437-2443 (2001); and Butscher et al., J Biol Chem 3(1):552-560 (1998), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the SUPT cell line, which is a suspension culture of IL-2 and IL-4 responsive T cells.</p>
28	HCWKC15	327	Activation of transcription through CD28 response element in immune cells (such as T-cells).	<p>Assays for the activation of transcription through the Gamma Interferon Activation Site (GAS) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate STAT transcription factors and modulate gene expression involved in a wide variety of cell functions. Exemplary assays for transcription through the GAS response element that may be used or routinely modified to test GAS-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1988); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Matikainen et al., Blood 93(6):1980-1991 (1999); and Hentinen et al., J Immunol 155(10):4582-4587 (1995), the contents of each of which are herein incorporated by reference in its entirety. Exemplary human T cells, such as the SUPT cell line, that may be used according to these assays are publicly available (e.g., through the ATCC).</p>

28	HCWKC15	327	Activation of transcription through NFAT response element in immune cells (such as T-cells).	<p>Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions. Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Serfling et al., Biochim Biophys Acta 1498(1):1-18 (2000); De Boer et al., Int J Biochem Cell Biol 31(10):1221-1236 (1999); Fraser et al., Eur J Immunol 29(3):838-844 (1999); and Yeseen et al., J Biol Chem 268(19):14285-14293 (1993), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the SUPT cell line, which is a suspension culture of IL-2 and IL-4 responsive T cells.</p>
28	HCWKC15	327	Activation of transcription through NFkB response element in immune cells (such as T-cells).	<p>Assays for the activation of transcription through the NFkB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFkB transcription factors and modulate expression of immunomodulatory genes. Exemplary assays for transcription through the NFkB response element that may be used or routinely modified to test NFkB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Black et al., Virus Gnes 15(2):105-117 (1997); and Fraser et al., 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the SUPT cell line, which is a suspension culture of IL-2 and IL-4 responsive T cells.</p>
28	HCWKC15	327	Activation of transcription through NFAT response element in immune cells	<p>Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions. Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including</p>

28	HCWKC15	327	(such as natural killer cells).	antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Aramburu et al., J Exp Med 182(3):801-810 (1995); De Boer et al., Int J Biochem Cell Biol 31(10):1221-1236 (1999); Fraser et al., Eur J Immunol 29(3):838-844 (1999); and Yeseen et al., J Biol Chem 268(19):14285-14293 (1993), the contents of each of which are herein incorporated by reference in its entirety. NK cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human NK cells that may be used according to these assays include the NK-YT cell line, which is a human natural killer cell line with cytolytic and cytotoxic activity.
29	HDHEB60	328	Activation of transcription through cAMP response element in pre-adipocytes.	Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate serum response factors and modulate the expression of genes involved in growth and upregulate the function of growth-related genes in many cell types. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Benson et al., J Immunol 153(9):3862-3873 (1994); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary T cells that may be used according to these assays include the NK-YT cell line, which is a human natural killer cell line with cytolytic and cytotoxic activity.
				Assays for the activation of transcription through the cAMP response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to increase cAMP, regulate CREB transcription factors, and modulate expression of genes involved in a wide variety of cell functions. For example, a 3T3-L1/CRE reporter assay may be used to identify factors that activate the cAMP signaling pathway. CREB plays a major role in adipogenesis, and is involved in differentiation into adipocytes. CRE contains the binding sequence for the transcription factor CREB (CRE binding protein). Exemplary assays for transcription through the cAMP response element that may be used or routinely modified to test cAMP-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Reusch et al., Mol Cell Biol 20(3):1008-1020 (2000); and Klemm et al., J Biol Chem

29	HDHEB60	328	Myoblast cell proliferation	<p>273:917-923 (1998), the contents of each of which are herein incorporated by reference in its entirety. Pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.</p> <p>Assays for muscle cell proliferation are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit myoblast cell proliferation. Exemplary assays for myoblast cell proliferation that may be used or routinely modified to test activity of polypeptides and antibodies of the invention (including agonists or antagonists of the invention) include, for example, assays disclosed in: Soeta, C., et al. "Possible role for the c-ski gene in the proliferation of myogenic cells in regenerating skeletal muscles of rats" <i>Dev Growth Differ</i> 43(2):155-64 (2001); Ewton DZ, et al., "IGF binding proteins-4, -5 and -6 may play specialized roles during L6 myoblast proliferation and differentiation" <i>J Endocrinol</i> Mar;144(3):539-53 (1995); and, Pampusch MS, et al., "Effect of transforming growth factor beta on proliferation of L6 and embryonic porcine myogenic cells" <i>J Cell Physiol</i> Jun;143(3):524-8 (1990); the contents of each of which are herein incorporated by reference in their entirety. Exemplary myoblast cells that may be used according to these assays include the rat myoblast L6 cell line. Rat myoblast L6 cells are an adherent rat myoblast cell line, isolated from primary cultures of rat thigh muscle, that fuse to form multinucleated myotubes and striated fibers after culture in differentiation media.</p>
29	HDHEB60	328	Production of VCAM in endothelial cells (such as human umbilical vein endothelial cells (HUVEC))	<p>Assays for measuring expression of VCAM are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate VCAM expression. For example, FMAT may be used to measure the upregulation of cell surface VCAM-1 expression in endothelial cells. Endothelial cells are cells that line blood vessels, and are involved in functions that include, but are not limited to, angiogenesis, vascular permeability, vascular tone, and immune cell extravasation. Exemplary endothelial cells that may be used according to these assays include human umbilical vein endothelial cells (HUVEC), which are available from commercial sources. The expression of VCAM (CD106), a membrane-associated protein, can be upregulated by cytokines or other factors, and contributes to the extravasation of lymphocytes, leucocytes and other immune cells from blood vessels; thus VCAM expression plays a role in promoting immune and inflammatory responses.</p>
29	HDHEB60	328	Activation of transcription	<p>Assays for the activation of transcription through the Signal Transducers and Activators of Transcription (STAT6) response element are well-known in the art and may be used or routinely modified to assess the</p>

29	HDHFB60	328	through STAT6 response element in immune cells (such as natural killer cells).	ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate STAT6 transcription factors and modulate the expression of multiple genes. Exemplary assays for transcription through the STAT6 response element that may be used or routinely modified to test STAT6 response element activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Georas et al., Blood 92(12):4529-4538 (1998); Moffatt et al., Transplantation 69(7):1521-1523 (2000); Curriel et al., Eur J Immunol 27(8):1982-1987 (1997); and Masuda et al., J Biol Chem 275(38):29331-29337 (2000), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary rat natural killer cells that may be used according to these assays are publicly available (e.g., through the ATCC).
29	HDHFB60	328	Activation of transcription through AP1 response element in immune cells (such as T-cells).	Assays for the activation of transcription through the AP1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to modulate growth and other cell functions. Exemplary assays for transcription through the AP1 response element that may be used or routinely modified to test AP1-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1988); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Rellahan et al., J Biol Chem 272(49):30806-30811 (1997); Chang et al., Mol Cell Biol 18(9):4986-4993 (1998); and Fraser et al., Eur J Immunol 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. Human T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the SUPT cell line, which is an IL-2 and IL-4 responsive suspension-culture cell line.
29	HDHFB60	328	Activation of transcription through CD28 response element in immune cells (such as T-cells).	Assays for the activation of transcription through the CD28 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate IL-2 expression in T cells. Exemplary assays for transcription through the CD28 response element that may be used or routinely modified to test CD28-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); McGuire and Iacobelli, J Immunol 159(3):1319-1327 (1997); Parra et al., J Immunol 166(4):2437-2443 (2001); and Butscher et al., J Biol Chem 273(1):552-560 (1998), the contents

29	HDHIEB60	328	Activation of transcription through GAS response element in immune cells (such as T-cells).	<p>of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the SUPT cell line, which is a suspension culture of IL-2 and IL-4 responsive T cells.</p> <p>Assays for the activation of transcription through the Gamma Interferon Activation Site (GAS) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate STAT transcription factors and modulate gene expression involved in a wide variety of cell functions. Exemplary assays for transcription through the GAS response element that may be used or routinely modified to test GAS-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Matikainen et al., Blood 93(6):1980-1991 (1999); and Hentinen et al., J Immunol 155(10):4582-4587 (1995), the contents of each of which are herein incorporated by reference in its entirety. Exemplary human T cells, such as the SUPT cell line, that may be used according to these assays are publicly available (e.g., through the ATCC).</p>
29	HDHIEB60	328	Activation of transcription through NFAT response element in immune cells (such as T-cells).	<p>Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions. Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Serfling et al., Biochim Biophys Acta 1498(1):1-18 (2000); De Boer et al., Int J Biochem Cell Biol 31(10):1221-1236 (1999); Fraser et al., Eur J Immunol 29(3):838-844 (1999); and Yeseen et al., J Biol Chem 268(19):14285-14293 (1993), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the SUPT cell line, which is a suspension culture of IL-2 and IL-4 responsive T cells.</p>
29	HDHIEB60	328	Activation of transcription through STAT6	<p>Assays for the activation of transcription through the Signal Transducers and Activators of Transcription (STAT6) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention)</p>

29	HDHEB60	328	response element in immune cells (such as T-cells).	<p>to regulate STAT6 transcription factors and modulate the expression of multiple genes. Exemplary assays for transcription through the STAT6 response element that may be used or routinely modified to test STAT6 response element activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Georas et al., Blood 92(12):4529-4538 (1998); Moffatt et al., Transplantation 69(7):1521-1523 (2000); Curjel et al., Eur J Immunol 27(8):1982-1987 (1997); and Masuda et al., J Biol Chem 275(38):29331-29337 (2000), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary T cells that may be used according to these assays include the SUPT cell line, which is a suspension culture of IL-2 and IL-4 responsive T cells.</p> <p>Assays for the activation of transcription through the NFkB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFkB transcription factors and modulate expression of immunomodulatory genes. Exemplary assays for transcription through the NFkB response element that may be used or routinely modified to test NFkB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Black et al., Virus Gnes 15(2):105-117 (1997); and Fraser et al., 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the SUPT cell line, which is a suspension culture of IL-2 and IL-4 responsive T cells.</p>
29	HDHEB60	328	Activation of transcription through NFAT response element in immune cells (such as T-cells).	<p>Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions. Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Aramburu et al., J Exp Med 182(3):801-810 (1995); De Boer et al., Int J Biochem Cell Biol 31(10):1221-1236 (1999); Fraser et al., Eur J Immunol 29(3):838-844 (1999);</p>

30	HDPBA28	329	<p>and Yeseen et al., J Biol Chem 268(19):14285-14293 (1993), the contents of each of which are herein incorporated by reference in its entirety. NK cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human NK cells that may be used according to these assays include the NK-YT cell line, which is a human natural killer cell line with cytolytic and cytotoxic activity.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li, M., et al., Endocrinology, 138(9):3735-40 (1997); Kim, K.H., et al., FEBS Lett, 377(2):237-9 (1995); and, Miraglia S et. al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. Endocrinology 1992 130:167.</p>
30	HDPBA28	329	<p>Assays for production of IL-10 and activation of T-cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit production of IL-10 and/or activation of T-cells. Exemplary assays that may be used or routinely modified to assess the ability of polypeptides and antibodies of the invention (including agonists or antagonists of the invention) to modulate IL-10 production and/or T-cell proliferation include, for example, assays such as disclosed and/or cited in: Robinson, DS, et al., "Th-2 cytokines in allergic disease" Br Med Bull; 56 (4): 956-968 (2000), and Cohn, et al., "T-helper type 2 cell-directed therapy for asthma" Pharmacology & Therapeutics; 88: 187-196 (2000); the contents of each of which are herein incorporated by reference in their entirety. Exemplary cells that may be used according to these assays include Th2 cells. IL10 secreted from Th2 cells may be measured as a marker of Th2 cell activation. Th2 cells are a class of T cells that secrete IL4, IL10, IL13, IL5 and IL6. Factors that induce differentiation and activation of Th2 cells play a major role in the initiation and pathogenesis of allergy and asthma. Primary T helper 2 cells are</p>

31	HDPCL63	330	Regulation of transcription through the FAS promoter element in hepatocytes	<p>generated via in vitro culture under Th2 polarizing conditions using peripheral blood lymphocytes isolated from cord blood.</p> <p>Assays for the regulation of transcription through the FAS promoter element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the FAS promoter element in a reporter construct and to regulate transcription of FAS, a key enzyme for lipogenesis. FAS promoter is regulated by many transcription factors including SREBP. Insulin increases FAS gene transcription in livers of diabetic mice. This stimulation of transcription is also somewhat glucose dependent.</p> <p>Exemplary assays that may be used or routinely modified to test for FAS promoter element activity (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Xiong, S., et al., <i>Proc Natl Acad Sci U.S.A.</i>, 97(8):3948-53 (2000); Roder, K., et al., <i>Eur J Biochem</i>, 260(3):743-51 (1999); Oskouian B, et al., <i>Biochem J</i>, 317 (Pt 1):257-65 (1996); Berger, et al., <i>Gene</i> 66:1-10 (1988); and, Cullen, B., et al., <i>Methods in Enzymol.</i> 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays, such as H4IIE cells, are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays include rat liver hepatoma cell line(s) inducible with glucocorticoids, insulin, or cAMP derivatives.</p>
32	HDPCCO25	331	Regulation of viability and proliferation of pancreatic beta cells.	<p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ohtani KI, et al., <i>Endocrinology</i>, 139(1):172-8 (1998); Krauthaim A, et al., <i>Exp Clin Endocrinol Diabetes</i>, 107 (1):29-34 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATCC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J.</i> 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci.</i></p>

32	HDPCO25	331	Activation of transcription through NFKB response element in immune cells (such as T-cells).	<p>USA 78: 4339-4343, 1981.</p> <p>Assays for the activation of transcription through the NFKB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFKB transcription through the modulate expression of immunomodulatory genes. Exemplary assays for transcription through the NFKB response element that may be used or routinely modified to test NFKB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Black et al., Virus Gnes 15(2): 105-117 (1997); and Fraser et al., 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the SUPT cell line, which is a suspension culture of IL-2 and IL-4 responsive T cells.</p>
33	HDPPF29	332	Myoblast cell proliferation	<p>Assays for muscle cell proliferation are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit myoblast cell proliferation. Exemplary assays for myoblast cell proliferation that may be used or routinely modified to test activity of polypeptides and antibodies of the invention (including agonists or antagonists of the invention) include, for example, assays disclosed in: Soeta, C., et al. "Possible role for the c-ski gene in the proliferation of myogenic cells in regenerating skeletal muscles of rats" Dev Growth Differ Apr;43(2):155-64 (2001); Ewton DZ, et al., "IGF binding proteins-4, -5 and -6 may play specialized roles during L6 myoblast proliferation and differentiation" J Endocrinol Mar;144(3):539-53 (1995); and, Pampusch MS, et al., "Effect of transforming growth factor beta on proliferation of L6 and embryonic porcine myogenic cells" J Cell Physiol Jun;143(3):524-8 (1990); the contents of each of which are herein incorporated by reference in their entirety. Exemplary myoblast cells that may be used according to these assays include the rat myoblast L6 cell line. Rat myoblast L6 cells are an adherent rat myoblast cell line, isolated from primary cultures of rat thigh muscle, that fuse to form multinucleated myotubes and striated fibers after culture in differentiation media.</p>
34	HDPGT01	333	Regulation of transcription through the FAS promoter element in	<p>Assays for the regulation of transcription through the FAS promoter element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the FAS promoter element in a reporter construct and to regulate transcription of FAS, a key enzyme for lipogenesis. FAS promoter is regulated by many transcription factors including SREBP. Insulin increases FAS gene transcription in</p>

35	HDPHI51	334	hepatocytes	<p>livers of diabetic mice. This stimulation of transcription is also somewhat glucose dependent. Exemplary assays that may be used or routinely modified to test for FAS promoter element activity (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Xiong, S., et al., Proc Natl Acad Sci U.S.A., 97(8):3948-53 (2000); Roder, K., et al., Eur J Biochem, 260(3):743-51 (1999); Oskouian B, et al., Biochem J, 317 (Pt 1):257-65 (1996); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays, such as H4IIE cells, are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays include rat liver hepatoma cell line(s) inducible with glucocorticoids, insulin, or cAMP derivatives.</p> <p>Assays for the regulation of transcription through the FAS promoter element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the FAS promoter element in a reporter construct and to regulate transcription of FAS, a key enzyme for lipogenesis. FAS promoter is regulated by many transcription factors including SREBP. Insulin increases FAS gene transcription in livers of diabetic mice. This stimulation of transcription is also somewhat glucose dependent.</p> <p>Exemplary assays that may be used or routinely modified to test for FAS promoter element activity (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Xiong, S., et al., Proc Natl Acad Sci U.S.A., 97(8):3948-53 (2000); Roder, K., et al., Eur J Biochem, 260(3):743-51 (1999); Oskouian B, et al., Biochem J, 317 (Pt 1):257-65 (1996); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays, such as H4IIE cells, are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays include rat liver hepatoma cell line(s) inducible with glucocorticoids, insulin, or cAMP derivatives.</p>
35	HDPHI51	334	Activation of transcription through STAT6 response element in immune cells (such as T-	<p>Assays for the activation of transcription through the Signal Transducers and Activators of Transcription (STAT6) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate STAT6 transcription factors and modulate the expression of multiple genes. Exemplary assays for transcription through the STAT6 response element that may be used or routinely modified to test STAT6 response element activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998);</p>

36	HDPJM30	335	cells).	<p>Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Georas et al., Blood 92(12):4529-4538 (1998); Moffatt et al., Transplantation 69(7):1521-1523 (2000); Curiel et al., Eur J Immunol 27(8):1982-1987 (1997); and Masuda et al., J Biol Chem 275(38):29331-29337 (2000), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary T cells that may be used according to these assays include the SUPT cell line, which is a suspension culture of IL-2 and IL-4 responsive T cells.</p> <p>MCP-1 FMAAT. Assays for immunomodulatory proteins that are produced by a large variety of cells and act to induce chemotaxis and activation of monocytes and T cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation, induce chemotaxis, and modulate immune cell activation. Exemplary assays that test for immunomodulatory proteins evaluate the production of cell surface markers, such as monocyte chemoattractant protein (MCP), and the activation of monocytes and T cells. Such assays that may be used or routinely modified to test immunomodulatory and differentiation activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); Sathaporn and Eremin, J R Coll Surg Ednb 45(1):9-19 (2001); and Verhasselt et al., J Immunol 158:2919-2925 (1997), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.</p>
36	HDPJM30	335	Production of MCP-1	<p>Assays for the regulation of transcription through the FAS promoter element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the FAS promoter element in a reporter construct and to regulate transcription of FAS, a key enzyme for lipogenesis. FAS promoter is regulated by many transcription factors including SREBP. Insulin increases FAS gene transcription in livers of diabetic mice. This stimulation of transcription is also somewhat glucose dependent.</p> <p>Exemplary assays that may be used or routinely modified to test for FAS promoter element activity (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Xiong, S., et al., Proc Natl Acad Sci U.S.A., 97(8):3948-53 (2000); Roder, K., et al., Eur J Biochem, 260(3):743-51 (1999); Oskouian B, et al., Biochem J, 317 (Pt 1):257-65 (1996); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368</p>

37	HDPM188	336	Myoblast cell proliferation	<p>(1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays, such as H4IIE cells, are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays include rat liver hepatoma cell line(s) inducible with glucocorticoids, insulin, or cAMP derivatives.</p> <p>Assays for muscle cell proliferation are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit myoblast cell proliferation. Exemplary assays for myoblast cell proliferation that may be used or routinely modified to test activity of polypeptides and antibodies of the invention (including agonists or antagonists of the invention) include, for example, assays disclosed in: Soeta, C., et al. "Possible role for the c-ski gene in the proliferation of myogenic cells in regenerating skeletal muscles of rats" <i>Dev Growth Differ</i> Apr;43(2):155-64 (2001); Ewton DZ, et al., "IGF binding proteins-4, -5 and -6 may play specialized roles during L6 myoblast proliferation and differentiation" <i>J Endocrinol Mar</i>;144(3):539-53 (1995); and, Pampusch MS, et al., "Effect of transforming growth factor beta on proliferation of L6 and embryonic porcine myogenic cells" <i>J Cell Physiol Jun</i>;143(3):524-8 (1990); the contents of each of which are herein incorporated by reference in their entirety. Exemplary myoblast cells that may be used according to these assays include the rat myoblast L6 cell line. Rat myoblast L6 cells are an adherent rat myoblast cell line, isolated from primary cultures of rat thigh muscle, that fuse to form multinucleated myotubes and striated fibers after culture in differentiation media.</p>
38	HDPO108	337	Regulation of apoptosis in pancreatic beta cells.	<p>Caspase Apoptosis. Assays for caspase apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote caspase protease-mediated apoptosis. Apoptosis in pancreatic beta is associated with induction and progression of diabetes. Exemplary assays for caspase apoptosis that may be used or routinely modified to test caspase apoptosis activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in: Loweth, AC, et al., <i>FEBS Lett</i>, 400(3):285-8 (1997); Sairi, KS, et al., <i>Biochem Mol Biol Int</i>, 39(6):1229-36 (1996); Krauthelm, A., et al., <i>Br J Pharmacol</i>, 129(4):687-94 (2000); Chandra J, et al., <i>Diabetes</i>, 50 Suppl 1:S44-7 (2001); Suk K, et al., <i>J Immunol</i>, 166(7):4481-9 (2001); Tejedo J, et al., <i>FEBS Lett</i>, 459(2):238-43 (1999); Zhang, S., et al., <i>FEBS Lett</i>, 455(3):315-20 (1999); Lee et al., <i>FEBS Lett</i> 485(2-3): 122-126 (2000); Nor et al., <i>J Vasc Res</i> 37(3): 209-218 (2000); and Karsan and Harlan, <i>J Atheroscler Thromb</i> 3(2): 75-80 (1996); the contents of each of which are herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that</p>

39	HDPPN86	338	Stimulation of insulin secretion from pancreatic beta cells.	<p>may be used according to these assays include RIN-m. RIN-m is a rat adherent pancreatic beta cell insulinoma cell line derived from a radiation induced transplantable rat islet cell tumor. The cells produce and secrete islet polypeptide hormones, and produce insulin, somatostatin, and possibly glucagon. ATTC: #CRL-2057 Chick et al. Proc. Natl. Acad. Sci. 1977 74:628; AF et al. Proc. Natl. Acad. Sci. 1980 77:3519.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li, M., et al., Endocrinology, 138(9):3735-40 (1997); Kim, K.H., et al., FEBS Lett, 377(2):237-9 (1995); and, Miraglia S et. al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. Endocrinology 1992 130:167.</p>
40	HDPSB18	339	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li, M., et al., Endocrinology, 138(9):3735-40 (1997); Kim, K.H., et al., FEBS Lett, 377(2):237-9 (1995); and, Miraglia S et. al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1</p>

40	HDPSB18	339	Production of IL-10 and downregulation of immune responses	<p>cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>IL-10 FMAT. Assays for immunomodulatory proteins produced by activated T cells, B cells, and monocytes that exhibit anti-inflammatory activity and downregulate monocyte/macrophage function and expression of cytokines are well known in the art and may be used or routinely modified to assess the ability of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation, regulate inflammatory activities, and modulate immune cell function and cytokine production. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines, such as IL-10, and the downmodulation of immune responses. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Miraglia et al., <i>J Biomolecular Screening</i> 4:193-204 (1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); and Koning et al., <i>Cytokine</i> 9(6):427-436 (1997), the contents of each of which are herein incorporated by reference in its entirety. Human T cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human T cells are primary human lymphocytes that mature in the thymus and express a T cell receptor and CD3, CD4, or CD8. These cells mediate humoral or cell-mediated immunity and may be preactivated to enhance responsiveness to immunomodulatory factors.</p>
41	HDPSH53	340	Stimulation of Calcium Flux in pancreatic beta cells.	<p>Assays for measuring calcium flux are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mobilize calcium. For example, the FLPR assay may be used to measure influx of calcium. Cells normally have very low concentrations of cytosolic calcium compared to much higher extracellular calcium. Extracellular factors can cause an influx of calcium, leading to activation of calcium responsive signaling pathways and alterations in cell functions. Exemplary assays that may be used or routinely modified to measure calcium flux by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Satin LS, et al., <i>Endocrinology</i>, 136(10):4589-601 (1995); Mogami H, et al., <i>Endocrinology</i>, 136(7):2960-6 (1995); Richardson SB, et al., <i>Biochem J</i>, 288 (Pt 3):847-51 (1992); and Meats, JE, et al., <i>Cell Calcium</i> 1989 Nov-Dec;10(8):535-41 (1989), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete</p>

42	HDPSP01	341	Production of MCP-1	<p>insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p> <p>MCP-1 FMAT. Assays for immunomodulatory proteins that are produced by a large variety of cells and act to induce chemotaxis and activation of monocytes and T cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation, induce chemotaxis, and modulate immune cell activation. Exemplary assays that test for immunomodulatory proteins evaluate the production of cell surface markers, such as monocyte chemoattractant protein (MCP), and the activation of monocytes and T cells. Such assays that may be used or routinely modified to test immunomodulatory and differentiation activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); Sathaporn and Eremin, J R Coll Surg Ednb 45(1):9-19 (2001); and Verhasselt et al., J Immunol 158:2919-2925 (1997), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.</p>
42	HDPSP01	341	Insulin Secretion	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and downregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., Endocr J, 47(3):261-9 (2000); Salapatek, A.M., et al., Mol Endocrinol, 13(8):1305-17 (1999); Filipsson, K., et al., Ann N Y Acad Sci, 865:441-4 (1998); Olson, L.K., et al., J Biol Chem, 271(28):16544-52 (1996); and, Miraglia S et. al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon,</p>

43	HDPSP54	342	Activation of Endothelial Cell JNK Signaling Pathway.	<p>somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p> <p>Kinase assay. JNK kinase assays for signal transduction that regulate cell proliferation, activation, or apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit cell proliferation, activation, and apoptosis. Exemplary assays for JNK kinase activity that may be used or routinely modified to test JNK kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Forrer et al., Biol Chem 379(8-9):1101-1110 (1998); Gupta et al., Exp Cell Res 247(2): 495-504 (1999); Kyriakis JM, Biochem Soc Symp 64:29-48 (1999); Chang and Karin, Nature 410(6824):37-40 (2001); and Cobb MH, Prog Biophys Mol Biol 71(3-4):479-500 (1999); the contents of each of which are herein incorporated by reference in its entirety. Endothelial cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary endothelial cells that may be used according to these assays include human umbilical vein endothelial cells (HUVEC), which are endothelial cells which line venous blood vessels, and are involved in functions that include, but are not limited to, angiogenesis, vascular permeability, vascular tone, and immune cell extravasation.</p>
43	HDPSP54	342	Regulation of apoptosis in pancreatic beta cells.	<p>Caspase Apoptosis. Assays for caspase apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote caspase protease-mediated apoptosis. Apoptosis in pancreatic beta is associated with induction and progression of diabetes. Exemplary assays for caspase apoptosis that may be used or routinely modified to test caspase apoptosis activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in: Loweth, AC, et al., FEBS Lett, 400(3):285-8 (1997); Sani, KS, et al., Biochem Mol Biol Int, 39(6):1229-36 (1996); Krautheim, A., et al., Br J Pharmacol, 129(4):687-94 (2000); Chandra J, et al., Diabetes, 50 Suppl 1:S44-7 (2001); Suk K, et al., J Immunol, 166(7):4481-9 (2001); Tejedo J, et al., FEBS Lett, 459(2):238-43 (1999); Zhang, S., et al., FEBS Lett, 455(3):315-20 (1999); Lee et al., FEBS Lett 485(2-3): 122-126 (2000); Nor et al., J Vasc Res 37(3): 209-218 (2000); and Karsan and Harlan, J Atheroscler Thromb 3(2): 75-80 (1996); the contents of each of which are herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include RIN-m. RIN-m is a rat adherent pancreatic beta cell insulinoma cell line derived from a radiation induced transplantable rat islet cell tumor. The cells produce and secrete islet polypeptide hormones, and produce insulin, somatostatin, and possibly</p>

43	HDPSP54	342	Production of IL-10 and activation of T-cells.	<p>glucagon. ATTC: #CRL-2057 Chick et al. Proc. Natl. Acad. Sci. 1977 74:628; AF et al. Proc. Natl. Acad. Sci. 1980 77:3519.</p> <p>Assays for production of IL-10 and activation of T-cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit production of IL-10 and/or activation of T-cells. Exemplary assays that may be used or routinely modified to assess the ability of polypeptides and antibodies of the invention (including agonists or antagonists of the invention) to modulate IL-10 production and/or T-cell proliferation include, for example, assays such as disclosed and/or cited in: Robinson, DS, et al., "Th-2 cytokines in allergic disease" Br Med Bull; 56 (4): 956-968 (2000), and Cohn, et al., "T-helper type 2 cell-directed therapy for asthma" Pharmacology & Therapeutics; 88: 187-196 (2000); the contents of each of which are herein incorporated by reference in their entirety. Exemplary cells that may be used according to these assays include Th2 cells. IL10 secreted from Th2 cells may be measured as a marker of Th2 cell activation. Th2 cells are a class of T cells that secrete IL4, IL10, IL13, IL5 and IL6. Factors that induce differentiation and activation of Th2 cells play a major role in the initiation and pathogenesis of allergy and asthma. Primary T helper 2 cells are generated via in vitro culture under Th2 polarizing conditions using peripheral blood lymphocytes isolated from cord blood.</p>
44	HDPW68	343	Activation of Adipocyte ERK Signaling Pathway	<p>Kinase assay. Kinase assays, for example an Elk-1 kinase assay, for ERK signal transduction that regulate cell proliferation or differentiation are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit cell proliferation, activation, and differentiation. Exemplary assays for ERK kinase activity that may be used or routinely modified to test ERK kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Forrer et al., Biol Chem 379(8-9):1101-1110 (1998); Le Marchand-Brustel Y, Exp Clin Endocrinol Diabetes 107(2):126-132 (1999); Kyriakis JM, Biochem Soc Symp 64:29-48 (1999); Chang and Karin, Nature 410(6824):37-40 (2001); and Cobb MH, Prog Biophys Mol Biol 71(3-4):479-500 (1999); the contents of each of which are herein incorporated by reference in its entirety. Mouse adipocyte cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.</p>
44	HDPW68	343	Activation of transcription	<p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention</p>

44	HDPJW68	343	through serum response element in immune cells (such as T-cells).	<p>(including antibodies and agonists or antagonists of the invention) to regulate the serum response factors and modulate the expression of genes involved in growth. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell line, which is an IL-2 dependent suspension culture of T cells with cytotoxic activity.</p> <p>Assays for measuring calcium flux are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mobilize calcium. For example, the FLPR assay may be used to measure influx of calcium. Cells normally have very low concentrations of cytosolic calcium compared to much higher extracellular calcium. Extracellular factors can cause an influx of calcium, leading to activation of calcium responsive signaling pathways and alterations in cell functions. Exemplary assays that may be used or routinely modified to measure calcium flux by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Satin LS, et al., Endocrinology, 136(10):4589-601 (1995); Mogami H, et al., Endocrinology, 136(7):2960-6 (1995); Richardson SB, et al., Biochem J, 288 (Pt 3):847-51 (1992); and, Meats, JE, et al., Cell Calcium 1989 Nov-Dec;10(8):535-41 (1989), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT-T15 Cells. HIT-T15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p>
44	HDPJW68	343	Stimulation of Calcium Flux in pancreatic beta cells.	<p>Kinase assay. Kinase assays, for example an GSK-3 kinase assay, for P13 kinase signal transduction that regulate glucose metabolism and cell survival are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit glucose metabolism and cell survival. Exemplary assays for P13 kinase activity that may be used or routinely modified to test P13 kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention)</p>

45	HDPXY01	344	Insulin Secretion	<p>include assays disclosed in Forrer et al., <i>Biol Chem</i> 379(8-9):1101-1110 (1998); Nikoulina et al., <i>Diabetes</i> 49(2):263-271 (2000); and Schreyer et al., <i>Diabetes</i> 48(8):1662-1666 (1999), the contents of each of which are herein incorporated by reference in its entirety. Rat myoblast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary rat myoblast cells that may be used according to these assays include L6 cells. L6 is an adherent rat myoblast cell line, isolated from primary cultures of rat thigh muscle, that fuses to form multinucleated myotubes and striated fibers after culture in differentiation media.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., <i>Endocr J</i>, 47(3):261-9 (2000); Salapatek, A.M., et al., <i>Mol Endocrinol</i>, 13(8):1305-17 (1999); Filipsson, K., et al., <i>Ann N Y Acad Sci</i>, 865:441-4 (1998); Olson, L.K., et al., <i>J Biol Chem</i>, 271(28):16544-52 (1996); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT-T15 Cells. HIT-T15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft, <i>Biochem J</i>, 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p>
46	HDTBD53	345	Myoblast cell proliferation	<p>Assays for muscle cell proliferation are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit myoblast cell proliferation. Exemplary assays for myoblast cell proliferation that may be used or routinely modified to test activity of polypeptides and antibodies of the invention (including agonists or antagonists of the invention) include, for example, assays disclosed in: Soeta, C.; et al. "Possible role for the c-ski gene in the proliferation of myogenic cells in regenerating skeletal muscles of rats" <i>Dev Growth Differ</i> Apr;43(2):155-64 (2001); Ewton DZ, et al., "IGF binding proteins-4, -5 and -6 may play specialized roles during L6 myoblast proliferation and differentiation" <i>J Endocrinol Mar</i>;144(3):539-53 (1995); and, Pampusch MS, et al., "Effect of transforming growth factor</p>

47	HDTBV77	346	Regulation of transcription via DMEF1 response element in adipocytes and pre-adipocytes	<p>beta on proliferation of L6 and embryonic porcine myogenic cells" J Cell Physiol Jun;143(3):524-8 (1990); the contents of each of which are herein incorporated by reference in their entirety. Exemplary myoblast cells that may be used according to these assays include the rat myoblast L6 cell line. Rat myoblast L6 cells are an adherent rat myoblast cell line, isolated from primary cultures of rat thigh muscle, that fuse to form multinucleated myotubes and striated fibers after culture in differentiation media.</p> <p>Assays for the regulation of transcription through the DMEF1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the DMEF1 response element in a reporter construct (such as that containing the GLUT4 promoter) and to regulate insulin production. The DMEF1 response element is present in the GLUT4 promoter and binds to MEF2 transcription factor and another transcription factor that is required for insulin regulation of Glut4 expression in skeletal muscle. GLUT4 is the primary insulin-responsive glucose transporter in fat and muscle tissue. Exemplary assays that may be used or routinely modified to test for DMEF1 response element activity (in adipocytes and pre-adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Thai, M.V., et al., J Biol Chem, 273(23):14285-92 (1998); Mora, S., et al., J Biol Chem, 275(21):16323-8 (2000); Liu, M.L., et al., J Biol Chem, 269(45):28514-21 (1994); "Identification of a 30-base pair regulatory element and novel DNA binding protein that regulates the human GLUT4 promoter in transgenic mice", J Biol Chem. 2000 Aug 4;275(31):23666-73; Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Adipocytes and pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include the mouse 3T3-L1 cell line which is an adherent mouse preadipocyte cell line. Mouse 3T3-L1 cells are a continuous substrain of 3T3 fibroblasts developed through clonal isolation. These cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p>
48	HDTDQ23	347	Endothelial Cell Apoptosis	<p>Caspase Apoptosis. Assays for caspase apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote caspase protease-mediated apoptosis. Induction of apoptosis in endothelial cells supporting the vasculature of tumors is associated with tumor regression due to loss of tumor blood supply. Exemplary assays for caspase apoptosis that may be used or routinely modified to test caspase apoptosis activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Lee et al., FEBS Lett 485(2-3): 122-126 (2000); Nor et al., J Vasc Res 37(3): 209-218 (2000); and Karsan and Harlan, J Atheroscler Thromb 3(2):</p>

48	HDTDQ23	347	Stimulation of Calcium Flux in pancreatic beta cells.	<p>75-80 (1996); the contents of each of which are herein incorporated by reference in its entirety. Endothelial cells that may be used according to these assays are publicly available (e.g., through commercial sources). Exemplary endothelial cells that may be used according to these assays include bovine aortic endothelial cells (bAEC), which are an example of endothelial cells which line blood vessels and are involved in functions that include, but are not limited to, angiogenesis, vascular permeability, vascular tone, and immune cell extravasation.</p> <p>Assays for measuring calcium flux are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mobilize calcium. For example, the FLPR assay may be used to measure influx of calcium. Cells normally have very low concentrations of cytosolic calcium compared to much higher extracellular calcium. Extracellular factors can cause an influx of calcium, leading to activation of calcium responsive signaling pathways and alterations in cell functions. Exemplary assays that may be used or routinely modified to measure calcium flux by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Satin LS, et al., <i>Endocrinology</i>, 136(10):4589-601 (1995); Mogami H, et al., <i>Endocrinology</i>, 136(7):2960-6 (1995); Richardson SB, et al., <i>Biochem J</i>, 288 (Pt 3):847-51 (1992); and, Meats, JE, et al., <i>Cell Calcium</i> 1989 Nov-Dec;10(8):535-41 (1989), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J.</i> 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p>
49	HE2DE47	348	Regulation of apoptosis in pancreatic beta cells.	<p>Caspase Apoptosis. Assays for caspase apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote caspase protease-mediated apoptosis. Apoptosis in pancreatic beta is associated with induction and progression of diabetes. Exemplary assays for caspase apoptosis that may be used or routinely modified to test caspase activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in: Loweth, AC, et al., <i>FEBS Lett</i>, 400(3):285-8 (1997); Saini, KS, et al., <i>Biochem Mol Biol Int</i>, 39(6):1229-36 (1996); Krauthelm, A., et al., <i>Br J Pharmacol</i>, 129(4):687-94 (2000); Chandra J, et al., <i>Diabetes</i>, 50 Suppl 1:S44-7 (2001); Suk K, et al., <i>J Immunol</i>, 166(7):4481-9 (2001); Tejedo J, et al., <i>FEBS Lett</i>, 459(2):238-43 (1999); Zhang, S., et al., <i>FEBS Lett</i>, 455(3):315-20 (1999); Lee et al., <i>FEBS</i></p>

50	HE2NV57	349	Activation of T-Cell p38 or JNK Signaling Pathway.	<p>Lett 485(2-3): 122-126 (2000); Nor et al., J Vasc Res 37(3): 209-218 (2000); and Karsan and Harlan, J Atheroscler Thromb 3(2): 75-80 (1996); the contents of each of which are herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include RIN-m. RIN-m is a rat adherent pancreatic beta cell insulinoma cell line derived from a radiation induced transplantable rat islet cell tumor. The cells produce and secrete islet polypeptide hormones, and produce insulin, somatostatin, and possibly glucagon. ATCC: #CRL-2057 Chick et al. Proc. Natl. Acad. Sci. 1977 74:628; AF et al. Proc. Natl. Acad. Sci. 1980 77:3519.</p> <p>Kinase assay. JNK and p38 kinase assays for signal transduction that regulate cell proliferation, activation, or apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit immune cell (e.g. T-cell) proliferation, activation, and apoptosis. Exemplary assays for JNK and p38 kinase activity that may be used or routinely modified to test JNK and p38 kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Forrer et al., Biol Chem 379(8-9):1101-1110 (1998); Gupta et al., Exp Cell Res 247(2): 495-504 (1999); Kyriakis JM, Biochem Soc Symp 64:29-48 (1999); Chang and Karin, Nature 410(6824):37-40 (2001); and Cobb MH, Prog Biophys Mol Biol 71(3-4):479-500 (1999); the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell line, which is an IL-2 dependent suspension-culture cell line with cytotoxic activity.</p> <p>Assays for the activation of transcription through the AP1 response element are known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to modulate growth and other cell functions. Exemplary assays for transcription through the AP1 response element that may be used or routinely modified to test AP1-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1988); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Rellahan et al., J Biol Chem 272(49):30806-30811 (1997); Chang et al., Mol Cell Biol 18(9):4986-4993 (1998); and Fraser et al., Eur J Immunol 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell line, which is an IL-2 dependent suspension-culture cell</p>
50	HE2NV57	349	Activation of transcription through AP1 response element in immune cells (such as T-cells).	

50	HE2NV57	349	<p>line with cytotoxic activity.</p> <p>Assays for the activation of transcription through the cAMP response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to increase cAMP and regulate CREB transcription factors, and modulate expression of genes involved in a wide variety of cell functions. Exemplary assays for transcription through the cAMP response element that may be used or routinely modified to test cAMP-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Black et al., Virus Genes 15(2):105-117 (1997); and Belkowski et al., J Immunol 161(2):659-665 (1998), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell line, which is a suspension culture of IL-2 dependent cytotoxic T cells.</p>
50	HE2NV57	349	<p>Assays for the activation of transcription through the Gamma Interferon Activation Site (GAS) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate STAT transcription factors and modulate gene expression involved in a wide variety of cell functions. Exemplary assays for transcription through the GAS response element that may be used or routinely modified to test GAS-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Matikainen et al., Blood 93(6):1980-1991 (1999); and Hentinen et al., J Immunol 155(10):4582-4587 (1995), the contents of each of which are herein incorporated by reference in its entirety. Exemplary mouse T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary T cells that may be used according to these assays include the CTLL cell line, which is a suspension culture of IL-2 dependent cytotoxic T cells.</p>
50	HE2NV57	349	<p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate the serum response factors and modulate the expression of genes involved in growth. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al.,</p>

50	HE2NV57	349	Insulin Secretion	<p>cells).</p> <p>Proc Natl Acad Sci USA 85:6342-6346 (1988); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell line, which is an IL-2 dependent suspension culture of T cells with cytotoxic activity.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., Endocr J, 47(3):261-9 (2000); Salapatek, A.M., et al., Mol Endocrinol, 13(8):1305-17 (1999); Filipsson, K., et al., Ann N Y Acad Sci, 865:441-4 (1998); Olson, L.K., et al., J Biol Chem, 271(28):16544-52 (1996); and, Miraglia S et. al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p> <p>Assays for the activation of transcription through the CD28 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate IL-2 expression in T cells. Exemplary assays for transcription through the CD28 response element that may be used or routinely modified to test CD28-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); McGuire and Iacobelli, J Immunol 159(3):1319-1327 (1997); Parra et al., J Immunol 166(4):2437-2443 (2001); and Butscher et al., J Biol Chem 3(1):552-560 (1998), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be</p>
50	HE2NV57	349	Activation of transcription through CD28 response element in immune cells (such as T-cells).	

51	HE2PH36	350	Regulation of viability and proliferation of pancreatic beta cells.	<p>used according to these assays include the JURKAT cell line, which is a suspension culture of leukemia cells that produce IL-2 when stimulated.</p> <p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Friedrichsen BN, et al., Mol Endocrinol, 15(1):136-48 (2001); Huotari MA, et al., Endocrinology, 139(4):1494-9 (1998); Hugi SR, et al., J Biol Chem 1998 Jul 10;273(28):17771-9 (1998), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion.</p> <p>References: Asfari et al. Endocrinology 1992 130:167.</p>
52	HE8DS15	351	Activation of Adipocyte ERK Signaling Pathway	<p>Kinase assay. Kinase assays, for example an Elk-1 kinase assay, for ERK signal transduction that regulate cell proliferation or differentiation are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit cell proliferation, activation, and differentiation. Exemplary assays for ERK kinase activity that may be used or routinely modified to test ERK kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Forrer et al., Biol Chem 379(8-9):1101-1110 (1998); Le Marchand-Brustel Y, Exp Clin Endocrinol Diabetes 107(2):126-132 (1999); Kyriakis JM, Biochem Soc Symp 64:29-48 (1999); Chang and Karin, Nature 410(6824):37-40 (2001); and Cobb MH, Prog Biophys Mol Biol 71(3-4):479-500 (1999); the contents of each of which are herein incorporated by reference in its entirety. Mouse adipocyte cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.</p> <p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or</p>
52	HE8DS15	351	Regulation of	

53	HE9HY07	352	transcription of Malic Enzyme in adipocytes	<p>routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and MEδ identified as putative PPAR response elements. ME promoter may also respond to AP1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeper, R.S., et al., Mol Endocrinol, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., Mol Endocrinol, 8(10):1361-9 (1994); Barros, I., et al., J Biol Chem, 274(25):17997-8004 (1999); Ijpenberg, A., et al., J Biol Chem, 272(32):20108-20117 (1997); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays includes the H4IIE rat liver hepatoma cell line.</p>
53	HE9HY07	352	Activation of Adipocyte ERK Signaling Pathway	<p>Kinase assay. Kinase assays, for example an Elk-1 kinase assay, for ERK signal transduction that regulate cell proliferation or differentiation are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit cell proliferation, activation, and differentiation. Exemplary assays for ERK kinase activity that may be used or routinely modified to test ERK kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Forrer et al., Biol Chem 379(8-9):1101-1110 (1998); Le Marchand-Brustel Y, Exp Clin Endocrinol Diabetes 107(2):126-132 (1999); Kyriakis JM, Biochem Soc Symp 64:29-48 (1999); Chang and Karin, Nature 410(6824):37-40 (2001); and Cobb MH, Prog Biophys Mol Biol 71(3-4):479-500 (1999); the contents of each of which are herein incorporated by reference in its entirety. Mouse adipocyte cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.</p>
53	HE9HY07	352	Regulation of transcription through the FAS promoter	<p>Assays for the regulation of transcription through the FAS promoter element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the FAS promoter element in a reporter construct and to regulate transcription of FAS, a key enzyme for lipogenesis. FAS promoter is</p>

54	HEOMQ63	353	element in hepatocytes	<p>regulated by many transcription factors including SREBP. Insulin increases FAS gene transcription in livers of diabetic mice. This stimulation of transcription is also somewhat glucose dependent. Exemplary assays that may be used or routinely modified to test for FAS promoter element activity (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Xiong, S., et al., Proc Natl Acad Sci U.S.A., 97(8):3948-53 (2000); Roder, K., et al., Eur J Biochem, 260(3):743-51 (1999); Oskouian B, et al., Biochem J, 317 (Pt 1):257-65 (1996); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays, such as H4IIE cells, are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays include rat liver hepatoma cell line(s) inducible with glucocorticoids, insulin, or cAMP derivatives.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li, M., et al., Endocrinology, 138(9):3735-40 (1997); Kim, K.H., et al., FEBS Lett, 377(2):237-9 (1995); and, Miraglia S et al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. Endocrinology 1992 130:167.</p> <p>Kinase assay. Kinase assays, for example an Elk-1 kinase assay, for ERK signal transduction that regulate cell proliferation or differentiation are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit cell proliferation, activation, and differentiation. Exemplary assays for ERK kinase activity that may be used or routinely modified to test ERK kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the</p>
55	HEPAB80	354	Activation of Adipocyte ERK Signaling Pathway	

55	HEPAB80	354	Regulation of viability and proliferation of pancreatic beta cells.	<p>invention) include the assays disclosed in Forrer et al., Biol Chem 379(8-9):1101-1110 (1998); Le Marchand-Brustel Y, Exp Clin Endocrinol Diabetes 107(2):126-132 (1999); Kyriakis JM, Biochem Soc Symp 64:29-48 (1999); Chang and Karin, Nature 410(6824):37-40 (2001); and Cobb MH, Prog Biophys Mol Biol 71(3-4):479-500 (1999); the contents of each of which are herein incorporated by reference in its entirety. Mouse adipocyte cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.</p> <p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ohtani KI, et al., Endocrinology, 139(1):172-8 (1998); Krauthelm A, et al, Exp Clin Endocrinol Diabetes, 107 (1):29-34 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATCC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p>
56	HFABH95	355	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li,</p>

56	HFABH95	355	Upregulation of CD69 and activation of T cells	<p>M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995); and, Miraglia S et. al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>CD69 FMAT. CD69 is an activation marker that is expressed on activated T cells, B cells, and NK cells. CD69 is not expressed on resting T cells, B cells, or NK cells. CD69 has been found to be associated with inflammation. Assays for immunomodulatory proteins expressed in T cells, B cells, and leukocytes are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to modulate the activation of T cells, and/or mediate humoral or cell-mediated immunity. Exemplary assays that test for immunomodulatory proteins evaluate the upregulation of cell surface markers, such as CD69, and the activation of T cells. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include, for example, the assays disclosed in Miraglia et al., <i>J Biomolecular Screening</i> 4:193-204 (1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); Ferenczi et al., <i>J Autoimmun</i> 14(1):63-78 (2000); Werfel et al., <i>Allergy</i> 52(4):465-469 (1997); Taylor-Fishwick and Siegel, <i>Eur J Immunol</i> 25(12):3215-3221 (1995); and Afetra et al., <i>Ann Rheum Dis</i> 52(6):457-460 (1993), the contents of each of which are herein incorporated by reference in its entirety. Human T cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human T cells are primary human lymphocytes that mature in the thymus and express a T Cell receptor and CD3, CD4, or CD8. These cells mediate humoral or cell-mediated immunity and may be preactivated to enhance responsiveness to immunomodulatory factors.</p> <p>Assays for the regulation of transcription through the FAS promoter element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the FAS promoter element in a reporter construct and to regulate transcription of FAS, a key enzyme for lipogenesis. FAS promoter is regulated by many transcription factors including SREBP. Insulin increases FAS gene transcription in livers of diabetic mice. This stimulation of transcription is also somewhat glucose dependent. Exemplary assays that may be used or routinely modified to test for FAS promoter element activity (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the</p>
57	HFAEF57	356	Regulation of transcription through the FAS promoter element in hepatocytes	

58	HFCEB37	357	Regulation of transcription of Malic Enzyme in adipocytes	<p>invention) include assays disclosed in Xiong, S., et al., Proc Natl Acad Sci U.S.A., 97(8):3948-53 (2000); Roder, K., et al., Eur J Biochem, 260(3):743-51 (1999); Oskouian B, et al., Biochem J, 317 (Pt 1):257-65 (1996); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays, such as H4IIE cells, are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays include rat liver hepatoma cell line(s) inducible with glucocorticoids, insulin, or cAMP derivatives.</p> <p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and MED identified as putative PPAR response elements. ME promoter may also respond to AP1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeper, R.S., et al., Mol Endocrinol, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., Mol Endocrinol, 8(10):1361-9 (1994); Barroso, I., et al., J Biol Chem, 274(25):17997-8004 (1999); Ijpenberg, A., et al., J Biol Chem, 272(32):20108-20117 (1997); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays include the H4IIE rat liver hepatoma cell line.</p>
59	HFFAD59	358	Regulation of transcription via DMEF1 response element in adipocytes and pre-adipocytes	<p>Assays for the regulation of transcription through the DMEF1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the DMEF1 response element in a reporter construct (such as that containing the GLUT4 promoter) and to regulate insulin production. The DMEF1 response element is present in the GLUT4 promoter and binds to MEF2 transcription factor and another transcription factor that is required for insulin regulation of Glut4 expression in skeletal muscle. GLUT4 is the primary insulin-responsive glucose transporter in fat and muscle tissue. Exemplary assays that may be used or routinely modified to test for DMEF1 response element activity (in adipocytes and pre-adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Thai, M.V., et al., J Biol Chem, 273(23):14285-92 (1998); Mora,</p>

59	HFFAD59	358	Activation of transcription through API response element in immune cells (such as T-cells).	<p>S., et al., J Biol Chem, 275(21):16323-8 (2000); Liu, M.L., et al., J Biol Chem, 269(45):28514-21 (1994); "Identification of a 30-base pair regulatory element and novel DNA binding protein that regulates the human GLUT4 promoter in transgenic mice", J Biol Chem. 2000 Aug 4;275(31):23666-73; Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Adipocytes and pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include the mouse 3T3-L1 cell line which is an adherent mouse preadipocyte cell line. Mouse 3T3-L1 cells are a continuous substrain of 3T3 fibroblasts developed through clonal isolation. These cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p> <p>Assays for the activation of transcription through the AP1 response element are known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to modulate growth and other cell functions. Exemplary assays for transcription through the AP1 response element that may be used or routinely modified to test AP1-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1988); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Rellahan et al., J Biol Chem 272(49):30806-30811 (1997); Chang et al., Mol Cell Biol 18(9):4986-4993 (1998); and Fraser et al., Eur J Immunol 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell line, which is an IL-2 dependent suspension-culture cell line with cytotoxic activity.</p>
59	HFFAD59	358	Activation of transcription through serum response element in immune cells (such as T-cells).	<p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate the serum response factors and modulate the expression of genes involved in growth. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1988); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell line, which is an IL-2 dependent suspension</p>

60	HFGAD82	359	Activation of transcription through API response element in immune cells (such as T-cells).	<p>culture of T cells with cytotoxic activity.</p> <p>Assays for the activation of transcription through the API response element are known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to modulate growth and other cell functions. Exemplary assays for transcription through the API response element that may be used or routinely modified to test API-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1988); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); Rellahan et al., <i>J Biol Chem</i> 272(49):30806-30811 (1997); Chang et al., <i>Mol Cell Biol</i> 18(9):4986-4993 (1998); and Fraser et al., <i>Eur J Immunol</i> 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. Mouse T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the HT2 cell line, which is an IL-2 dependent suspension culture cell line that also responds to IL-4.</p>
60	HFGAD82	359	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p>
61	HFTUR10	360	Regulation of viability and proliferation of pancreatic beta	<p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable</p>

			cells.	cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ohtani KI, et al., <i>Endocrinology</i> , 139(1):172-8 (1998); Krauthelm A, et al, <i>Exp Clin Endocrinol Diabetes</i> , 107 (1):29-34 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J.</i> 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.
62	HFTBM50	361	Insulin Secretion	Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., <i>Endocr J.</i> 47(3):261-9 (2000); Salapatek, A.M., et al., <i>Mol Endocrinol</i> , 13(8):1305-17 (1999); Filipsson, K., et al., <i>Ann N Y Acad Sci</i> , 865:441-4 (1998); Olson, L.K., et al., <i>J Biol Chem</i> , 271(28):16544-52 (1996); and, Miraglia S et. al., <i>Journal of Biomolecular Screening</i> , 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J.</i> 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.
62	HFTBM50	361	Production of IL-10 and activation of T-	Assays for production of IL-10 and activation of T-cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit production of IL-10 and/or activation of

			cells.	<p>T-cells. Exemplary assays that may be used or routinely modified to assess the ability of polypeptides and antibodies of the invention (including agonists or antagonists of the invention) to modulate IL-10 production and/or T-cell proliferation include, for example, assays such as disclosed and/or cited in: Robinson, DS, et al., "Th-2 cytokines in allergic disease" <i>Br Med Bull</i>, 56 (4): 956-968 (2000), and Cohn, et al., "T-helper type 2 cell-directed therapy for asthma" <i>Pharmacology & Therapeutics</i>, 88: 187-196 (2000); the contents of each of which are herein incorporated by reference in their entirety.</p> <p>Exemplary cells that may be used according to these assays include Th2 cells. IL10 secreted from Th2 cells may be measured as a marker of Th2 cell activation. Th2 cells are a class of T cells that secrete IL4, IL10, IL13, IL5 and IL6. Factors that induce differentiation and activation of Th2 cells play a major role in the initiation and pathogenesis of allergy and asthma. Primary T helper 2 cells are generated via in vitro culture under Th2 polarizing conditions using peripheral blood lymphocytes isolated from cord blood.</p>
63	HFTDZ36	362	Protection from Endothelial Cell Apoptosis.	<p>Caspase Apoptosis Rescue. Assays for caspase apoptosis rescue are well known in the art and may be used or routinely modified to assess the ability of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to inhibit caspase protease-mediated apoptosis. Exemplary assays for caspase apoptosis that may be used or routinely modified to test caspase apoptosis rescue of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Romeo et al., <i>Cardiovasc Res</i> 45(3): 788-794 (2000); Messmer et al., <i>Br J Pharmacol</i> 127(7): 1633-1640 (1999); and <i>J Atheroscler Thromb</i> 3(2): 75-80 (1996); the contents of each of which are herein incorporated by reference in its entirety. Endothelial cells that may be used according to these assays are publicly available (e.g., through commercial sources). Exemplary endothelial cells that may be used according to these assays include bovine aortic endothelial cells (bAEC), which are an example of endothelial cells which line blood vessels and are involved in functions that include, but are not limited to, angiogenesis, vascular permeability, vascular tone, and immune cell extravasation.</p>
63	HFTDZ36	362	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995);</p>

64	HFXBL33	363	Regulation of transcription via DMEF1 response element in adipocytes and pre-adipocytes	<p>and, Miraglia S et al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. Endocrinology 1992 130:167.</p> <p>Assays for the regulation of transcription through the DMEF1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the DMEF1 response element in a reporter construct (such as that containing the GLUT4 promoter) and to regulate insulin production. The DMEF1 response element is present in the GLUT4 promoter and binds to MEF2 transcription factor and another transcription factor that is required for insulin regulation of Glut4 expression in skeletal muscle. GLUT4 is the primary insulin-responsive glucose transporter in fat and muscle tissue. Exemplary assays that may be used or routinely modified to test for DMEF1 response element activity (in adipocytes and pre-adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Thai, M.V., et al., J Biol Chem, 273(23):14285-92 (1998); Mora, S., et al., J Biol Chem, 275(21):16323-8 (2000); Liu, M.L., et al., J Biol Chem, 269(45):28514-21 (1994); "Identification of a 30-base pair regulatory element and novel DNA binding protein that regulates the human GLUT4 promoter in transgenic mice", J Biol Chem. 2000 Aug 4;275(31):23666-73; Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Adipocytes and pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include the mouse 3T3-L1 cell line which is an adherent mouse preadipocyte cell line. Mouse 3T3-L1 cells are a continuous substrain of 3T3 fibroblasts developed through clonal isolation. These cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p>
65	HFXJX44	364	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the</p>

66	HFXKT05	365	Myoblast cell proliferation	<p>invention) include assays disclosed in: Ahren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995); and, Miraglia S et. al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>Assays for muscle cell proliferation are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit myoblast cell proliferation. Exemplary assays for myoblast cell proliferation that may be used or routinely modified to test activity of polypeptides and antibodies of the invention (including agonists or antagonists of the invention) include, for example, assays disclosed in: Soeta, C., et al. "Possible role for the c-ski gene in the proliferation of myogenic cells in regenerating skeletal muscles of rats" <i>Dev Growth Differ</i> Apr;43(2):155-64 (2001); Ewton DZ, et al., "IGF binding proteins-4, -5 and -6 may play specialized roles during L6 myoblast proliferation and differentiation" <i>J Endocrinol</i> Mar;144(3):539-53 (1995); and, Pampusch MS, et al., "Effect of transforming growth factor beta on proliferation of L6 and embryonic porcine myogenic cells" <i>J Cell Physiol</i> Jun;143(3):524-8 (1990); the contents of each of which are herein incorporated by reference in their entirety. Exemplary myoblast cells that may be used according to these assays include the rat myoblast L6 cell line. Rat myoblast L6 cells are an adherent rat myoblast cell line, isolated from primary cultures of rat thigh muscle, that fuse to form multinucleated myotubes and striated fibers after culture in differentiation media.</p>
67	HGBHI35	366	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995); and, Miraglia S et. al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of</p>

68	HGLAF75	367	Regulation of transcription of Malic Enzyme in hepatocytes	<p>which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and MEed identified as putative PPAR response elements. ME promoter may also respond to AP1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeper, R.S., et al., <i>Mol Endocrinol</i>, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., <i>Mol Endocrinol</i>, 8(10):1361-9 (1994); Barroso, I., et al., <i>J Biol Chem</i>, 274(25):17997-8004 (1999); Ijpenberg, A., et al., <i>J Biol Chem</i>, 272(32):20108-20117 (1997); Berger, et al., <i>Gene</i> 66:1-10 (1988); and, Cullen, B., et al., <i>Methods in Enzymol.</i> 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays includes the mouse 3T3-L1 cell line. 3T3-L1 is a mouse preadipocyte cell line (adherent). It is a continuous substrain of 3T3 fibroblasts developed through clonal isolation. Cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p>
68	HGLAF75	367	Regulation of viability and proliferation of pancreatic beta cells.	<p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Friedrichsen BN, et al., <i>Mol Endocrinol</i>, 15(1):136-48 (2001); Huotari MA, et al., <i>Endocrinology</i>, 139(4):1494-9 (1998); Hugl SR, et al., <i>J Biol Chem</i> 1998 Jul 10;273(28):17771-9 (1998), the contents of each of which is herein incorporated by</p>

68	HGLAF75	367	Insulin Secretion	<p>reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion.</p> <p>References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., <i>Endocr J</i>, 47(3):261-9 (2000); Salapatek, A.M., et al., <i>Mol Endocrinol</i>, 13(8):1305-17 (1999); Filipsson, K., et al., <i>Ann N Y Acad Sci</i>, 865:441-4 (1998); Olson, L.K., et al., <i>J Biol Chem</i>, 271(28):16544-52 (1996); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J.</i> 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p>
69	HHENV10	368	Regulation of transcription through the FAS promoter element in hepatocytes	<p>Assays for the regulation of transcription through the FAS promoter element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the FAS promoter element in a reporter construct and to regulate transcription of FAS, a key enzyme for lipogenesis. FAS promoter is regulated by many transcription factors including SREBP. Insulin increases FAS gene transcription in livers of diabetic mice. This stimulation of transcription is also somewhat glucose dependent. Exemplary assays that may be used or routinely modified to test for FAS promoter element activity (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Xiong, S., et al., <i>Proc Natl Acad Sci U.S.A.</i>, 97(8):3948-53 (2000); Roder, K., et al., <i>Eur J Biochem</i>, 260(3):743-51 (1999); Oskouian B, et al., <i>Biochem J</i>, 317 (Pt 1):257-65</p>

70	HHGCG53	369	Stimulation of insulin secretion from pancreatic beta cells.	<p>(1996); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays, such as H4IIE cells, are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays include rat liver hepatoma cell line(s) inducible with glucocorticoids, insulin, or cAMP derivatives.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li, M., et al., Endocrinology, 138(9):3735-40 (1997); Kim, K.H., et al., FEBS Lett, 377(2):237-9 (1995); and, Miraglia S et. al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. Endocrinology 1992 130:167.</p>
71	HHGCM76	370	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li, M., et al., Endocrinology, 138(9):3735-40 (1997); Kim, K.H., et al., FEBS Lett, 377(2):237-9 (1995); and, Miraglia S et. al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated.</p>

71	HHGCM76	370	Production of ICAM-1	<p>Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. Endocrinology 1992 130:167.</p> <p>Assays for measuring expression of ICAM-1 are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate ICAM-1 expression. Exemplary assays that may be used or routinely modified to measure ICAM-1 expression include assays disclosed in: Takacs P, et al, FASEB J, 15(2):279-281 (2001); and, Miyamoto K, et al., Am J Pathol, 156(5):1733-1739 (2000), the contents of each of which is herein incorporated by reference in its entirety. Cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include microvascular endothelial cells (MVEC).</p>
72	HHPEN62	371	Stimulation of Calcium Flux in pancreatic beta cells.	<p>Assays for measuring calcium flux are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mobilize calcium. For example, the FLPR assay may be used to measure influx of calcium. Cells normally have very low concentrations of cytosolic calcium compared to much higher extracellular calcium. Extracellular factors can cause an influx of calcium, leading to activation of calcium responsive signaling pathways and alterations in cell functions. Exemplary assays that may be used or routinely modified to measure calcium flux by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Satin LS, et al., Endocrinology, 136(10):4589-601 (1995); Mogami H, et al., Endocrinology, 136(7):2960-6 (1995); Richardson SB, et al., Biochem J, 288 (Pt 3):847-51 (1992); and, Meats, JE, et al., Cell Calcium 1989 Nov-Dec;10(8):535-41 (1989), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p>
73	HJABB94	372	Insulin Secretion	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by</p>

74	HJACG30	373	Activation of transcription through serum response element in immune cells (such as T-cells).	<p>FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., <i>Endocr J</i>, 47(3):261-9 (2000); Salapatek, A.M., et al., <i>Mol Endocrinol</i>, 13(8):1305-17 (1999); Filipsson, K., et al., <i>Ann N Y Acad Sci</i>, 865:441-4 (1998); Olson, L.K., et al., <i>J Biol Chem</i>, 271(28):16544-52 (1996); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATCC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem J</i>. 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p> <p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate the serum response factors and modulate the expression of genes involved in growth. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); and Black et al., <i>Virus Genes</i> 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell line, which is an IL-2 dependent suspension culture of T cells with cytotoxic activity.</p>
74	HJACG30	373	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the</p>

75	HJBCY35	374	Regulation of viability and proliferation of pancreatic beta cells.	<p>invention) include assays disclosed in: Ahren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Friedrichsen BN, et al., <i>Mol Endocrinol</i>, 15(1):136-48 (2001); Huolari MA, et al., <i>Endocrinology</i>, 139(4):1494-9 (1998); Hugl SR, et al., <i>J Biol Chem</i> 1998 Jul 10;273(28):17771-9 (1998), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p>
75	HJBCY35	374	Activation of Skeletal Muscle Cell PI3 Kinase Signalling Pathway	<p>Kinase assay. Kinase assays, for example an GSK-3 kinase assay, for PI3 kinase signal transduction that regulate glucose metabolism and cell survival are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit glucose metabolism and cell survival. Exemplary assays for PI3 kinase activity that may be used or routinely modified to test PI3 kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Forrer et al., <i>Biol Chem</i> 379(8-9):1101-1110 (1998); Nikoulina et al., <i>Diabetes</i> 49(2):263-271 (2000); and Schreyer et al., <i>Diabetes</i> 48(8):1662-1666 (1999), the contents of each of which are herein incorporated by reference in its entirety. Rat myoblast cells that may be used</p>

76	HIPAD75	375	Activation of T-Cell p38 or JNK Signaling Pathway.	<p>according to these assays are publicly available (e.g., through the ATCC). Exemplary rat myoblast cells that may be used according to these assays include L6 cells. L6 is an adherent rat myoblast cell line, isolated from primary cultures of rat thigh muscle, that fuses to form multinucleated myotubes and striated fibers after culture in differentiation media.</p> <p>Kinase assay. JNK and p38 kinase assays for signal transduction that regulate cell proliferation, activation, or apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit immune cell (e.g. T-cell) proliferation, activation, and apoptosis. Exemplary assays for JNK and p38 kinase activity that may be used or routinely modified to test JNK and p38 kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Forrer et al., Biol Chem 379(8-9):1101-1110 (1998); Gupta et al., Exp Cell Res 247(2): 495-504 (1999); Kyriakis JM, Biochem Soc Symp 64:29-48 (1999); Chang and Karin, Nature 410(6824):37-40 (2001); and Cobb MH, Prog Biophys Mol Biol 71(3-4):479-500 (1999); the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell line, which is an IL-2 dependent suspension-culture cell line with cytotoxic activity.</p>
76	HIPAD75	375	Production of IL-6	<p>IL-6 FMAAT. IL-6 is produced by T cells and has strong effects on B cells. IL-6 participates in IL-4 induced IgE production and increases IgA production (IgA plays a role in mucosal immunity). IL-6 induces cytotoxic T cells. Deregulated expression of IL-6 has been linked to autoimmune disease, plasmacytomas, myelomas, and chronic hyperproliferative diseases. Assays for immunomodulatory and differentiation factor proteins produced by a large variety of cells where the expression level is strongly regulated by cytokines, growth factors, and hormones are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation and differentiation and modulate T cell proliferation and function. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines, such as IL-6, and the stimulation and upregulation of T cell proliferation and functional activities. Such assays that may be used or routinely modified to test immunomodulatory and differentiation activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); and Verhasselt et al., J Immunol 158:2919-2925 (1997), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting</p>

76	HJPAD75	375	Regulation of transcription through the FAS promoter element in hepatocytes	<p>cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.</p> <p>Assays for the regulation of transcription through the FAS promoter element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the FAS promoter element in a reporter construct and to regulate transcription of FAS, a key enzyme for lipogenesis. FAS promoter is regulated by many transcription factors including SREBP. Insulin increases FAS gene transcription in livers of diabetic mice. This stimulation of transcription is also somewhat glucose dependent.</p> <p>Exemplary assays that may be used or routinely modified to test for FAS promoter element activity (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Xiong, S., et al., <i>Proc Natl Acad Sci U.S.A.</i>, 97(8):3948-53 (2000); Roder, K., et al., <i>Eur J Biochem</i>, 260(3):743-51 (1999); Oskouian J, 317 (Pt 1):257-65 (1996); Berger, et al., <i>Gene</i> 66:1-10 (1988); and, Cullen, B., et al., <i>Methods in Enzymol.</i> 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays, such as H4IIE cells, are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays include rat liver hepatoma cell line(s) inducible with glucocorticoids, insulin, or cAMP derivatives.</p>
77	HKABZ65	376	Production of IL-6	<p>IL-6 FMAT. IL-6 is produced by T cells and has strong effects on B cells. IL-6 participates in IL-4 induced IgE production and increases IgA production (IgA plays a role in mucosal immunity). IL-6 induces cytotoxic T cells. Deregulated expression of IL-6 has been linked to autoimmune disease, plasmacytomas, myelomas, and chronic hyperproliferative diseases. Assays for immunomodulatory and differentiation factor proteins produced by a large variety of cells where the expression level is strongly regulated by cytokines, growth factors, and hormones are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation and differentiation and modulate T cell proliferation and function. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines, such as IL-6, and the stimulation and upregulation of T cell proliferation and functional activities. Such assays that may be used or routinely modified to test immunomodulatory and differentiation activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., <i>J Biomolecular Screening</i> 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); and Verhasselt et al., <i>J Immunol</i> 158:2919-2925 (1997), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using</p>

77	HKABZ65	376	Activation of Endothelial Cell p38 or JNK Signaling Pathway.	<p>techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.</p> <p>Kinase assay. JNK and p38 kinase assays for signal transduction that regulate cell proliferation, activation, or apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit cell proliferation, activation, and apoptosis. Exemplary assays for JNK and p38 kinase activity that may be used or routinely modified to test JNK and p38 kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Forrer et al., <i>Biol Chem</i> 379(8-9):1101-1110 (1998); Gupta et al., <i>Exp Cell Res</i> 247(2): 495-504 (1999); Kyriakis JM, <i>Biochem Soc Symp</i> 64:29-48 (1999); Chang and Karin, <i>Nature</i> 410(6824):37-40 (2001); and Cobb MH, <i>Prog Biophys Mol Biol</i> 71(3-4):479-500 (1999); the contents of each of which are herein incorporated by reference in its entirety. Endothelial cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary endothelial cells that may be used according to these assays include human umbilical vein endothelial cells (HUVEC), which are endothelial cells which line venous blood vessels, and are involved in functions that include, but are not limited to, angiogenesis, vascular permeability, vascular tone, and immune cell extravasation.</p> <p>Caspase Apoptosis. Assays for caspase apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote caspase protease-mediated apoptosis. Apoptosis in pancreatic beta is associated with induction and progression of diabetes. Exemplary assays for caspase apoptosis that may be used or routinely modified to test caspase apoptosis activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in: Loweth, AC, et al., <i>FEBS Lett</i>, 400(3):285-8 (1997); Saini, KS, et al., <i>Biochem Mol Biol Int</i>, 39(6):1229-36 (1996); Krauthelm, A., et al., <i>Br J Pharmacol</i>, 129(4):687-94 (2000); Chandra J, et al., <i>Diabetes</i>, 50 Suppl 1:S44-7 (2001); Suk K, et al., <i>J Immunol</i>, 166(7):4481-9 (2001); Tejedo J, et al., <i>FEBS Lett</i>, 459(2):238-43 (1999); Zhang, S., et al., <i>FEBS Lett</i>, 455(3):315-20 (1999); Lee et al., <i>FEBS Lett</i> 485(2-3): 122-126 (2000); Nor et al., <i>J Vasc Res</i> 37(3): 209-218 (2000); and Karsan and Harlan, <i>J Atheroscler Thromb</i> 3(2): 75-80 (1996); the contents of each of which are herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include RIN-m. RIN-m is a rat adherent pancreatic beta cell insulinoma cell line derived from a radiation induced transplantable rat islet cell tumor. The cells produce and secrete islet polypeptide hormones, and produce insulin, somatostatin, and possibly</p>
77	HKABZ65	376	Regulation of apoptosis in pancreatic beta cells.	

78	HKACB56	377	Myoblast cell proliferation	<p>glucagon. ATTC: #CRL-2057 Chick et al. Proc. Natl. Acad. Sci. 1977 74:628; AF et al. Proc. Natl. Acad. Sci. 1980 77:3519.</p> <p>Assays for muscle cell proliferation are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit myoblast cell proliferation. Exemplary assays for myoblast cell proliferation that may be used or routinely modified to test activity of polypeptides and antibodies of the invention (including agonists or antagonists of the invention) include, for example, assays disclosed in: Soeta, C., et al. "Possible role for the c-ski gene in the proliferation of myogenic cells in regenerating skeletal muscles of rats" Dev Growth Differ Apr;43(2):155-64 (2001); Ewton DZ, et al., "IGF binding proteins-4, -5 and -6 may play specialized roles during L6 myoblast proliferation and differentiation" J Endocrinol Mar;144(3):539-53 (1995); and, Pampusch MS, et al., "Effect of transforming growth factor beta on proliferation of L6 and embryonic porcine myogenic cells" J Cell Physiol Jun;143(3):524-8 (1990); the contents of each of which are herein incorporated by reference in their entirety. Exemplary myoblast cells that may be used according to these assays include the rat myoblast L6 cell line. Rat myoblast L6 cells are an adherent rat myoblast cell line, isolated from primary cultures of rat thigh muscle, that fuse to form multinucleated myotubes and striated fibers after culture in differentiation media.</p>
78	HKACB56	377	Production of IL-5	<p>IL-5 FMA.T. Assays for immunomodulatory proteins secreted by TH2 cells, mast cells, basophils, and eosinophils that stimulate eosinophil function and B cell Ig production and promote polarization of CD4+ cells into TH2 cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation, stimulate immune cell function, modulate B cell Ig production, modulate immune cell polarization, and/or mediate humoral or cell-mediated immunity. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines, such as IL-5, and the stimulation of eosinophil function and B cell Ig production. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204 (1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); Ohshima et al., Blood 92(9):3338-3345 (1998); Jung et al., Eur J Immunol 25(8):2413-2416 (1995); Mori et al., J Allergy Clin Immunol 106(1 Pt 2):558-564 (2000); and Koning et al., Cytokine 9(6):427-436 (1997), the contents of each of which are herein incorporated by reference in its entirety. Human T cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human T cells are primary human lymphocytes that mature in the thymus and express a T cell receptor and CD3, CD4, or CD8. These cells mediate humoral or cell-mediated</p>

78	HKACB56	377	Production of VCAM in endothelial cells (such as human umbilical vein endothelial cells (HUVEC))	immunity and may be preactivated to enhance responsiveness to immunomodulatory factors. Assays for measuring expression of VCAM are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate VCAM expression. For example, FMAT may be used to measure the upregulation of cell surface VCAM-1 expression in endothelial cells. Endothelial cells are cells that line blood vessels, and are involved in functions that include, but are not limited to, angiogenesis, vascular permeability, vascular tone, and immune cell extravasation. Exemplary endothelial cells that may be used according to these assays include human umbilical vein endothelial cells (HUVEC), which are available from commercial sources. The expression of VCAM (CD106), a membrane-associated protein, can be upregulated by cytokines or other factors, and contributes to the extravasation of lymphocytes, leucocytes and other immune cells from blood vessels; thus VCAM expression plays a role in promoting immune and inflammatory responses.
78	HKACB56	377	Activation of Endothelial Cell p38 or JNK Signaling Pathway.	Kinase assay. JNK and p38 kinase assays for signal transduction that regulate cell proliferation, activation, or apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit cell proliferation, activation, and apoptosis. Exemplary assays for JNK and p38 kinase activity that may be used or routinely modified to test JNK and p38 kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Forrer et al., Biol Chem 379(8-9):1101-1110 (1998); Gupta et al., Exp Cell Res 247(2): 495-504 (1999); Kyriakis JM, Biochem Soc Symp 64:29-48 (1999); Chang and Karin, Nature 410(6824):37-40 (2001); and Cobb MH, Prog Biophys Mol Biol 71(3-4):479-500 (1999); the contents of each of which are herein incorporated by reference in its entirety. Endothelial cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary endothelial cells that may be used according to these assays include human umbilical vein endothelial cells (HUVEC), which are endothelial cells which line venous blood vessels, and are involved in functions that include, but are not limited to, angiogenesis, vascular permeability, vascular tone, and immune cell extravasation. CD152 FMAT. CD152 (a.k.a. CTLA-4) expression is restricted to activated T cells. CD152 is a negative regulator of T cell proliferation. Reduced CD152 expression has been linked to hyperproliferative and autoimmune diseases. Overexpression of CD152 may lead to impaired immunoresponses. Assays for immunomodulatory proteins important in the maintenance of T cell homeostasis and expressed almost exclusively on CD4+ and CD8+ T cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to modulate the activation of T cells, maintain T cell homeostasis, and/or mediate humoral or cell-mediated immunity. Exemplary assays that test for
78	HKACB56	377	Upregulation of CD152 and activation of T cells	

79	HKACD58	378	Regulation of transcription via DMEF1 response element in adipocytes and pre-adipocytes	<p>immunomodulatory proteins evaluate the upregulation of cell surface markers, such as CD152, and the activation of T cells. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include, for example, the assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204 (1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); McCoy et al., Immunol Cell Biol 77(1):1-10 (1999); Oostervegal et al., Curr Opin Immunol 11(3):294-300 (1999); and Saito T, Curr Opin Immunol 10(3):313-321 (1998), the contents of each of which are herein incorporated by reference in its entirety. Human T cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human T cells are primary human lymphocytes that mature in the thymus and express a T Cell receptor and CD3, CD4, or CD8. These cells mediate humoral or cell-mediated immunity and may be preactivated to enhance responsiveness to immunomodulatory factors.</p> <p>Assays for the regulation of transcription through the DMEF1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the DMEF1 response element in a reporter construct (such as that containing the GLUT4 promoter) and to regulate insulin production. The DMEF1 response element is present in the GLUT4 promoter and binds to MEF2 transcription factor and another transcription factor that is required for insulin regulation of Glut4 expression in skeletal muscle. GLUT4 is the primary insulin-responsive glucose transporter in fat and muscle tissue. Exemplary assays that may be used or routinely modified to test for DMEF1 response element activity (in adipocytes and pre-adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Thai, M.V., et al., J Biol Chem, 273(23):14285-92 (1998); Mora, S., et al., J Biol Chem, 275(21):16323-8 (2000); Liu, M.L., et al., J Biol Chem, 269(45):28514-21 (1994); "Identification of a 30-base pair regulatory element and novel DNA binding protein that regulates the human GLUT4 promoter in transgenic mice", J Biol Chem. 2000 Aug 4;275(31):23666-73; Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Adipocytes and pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include the mouse 3T3-L1 cell line which is an adherent mouse preadipocyte cell line. Mouse 3T3-L1 cells are a continuous substrain of 3T3 fibroblasts developed through clonal isolation. These cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p>
79	HKACD58	378	IL-2 in Human T cells	

79	HKACD58	378	Activation of transcription through serum response element in immune cells (such as natural killer cells).	<p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate serum response factors and modulate the expression of genes involved in growth and upregulate the function of growth-related genes in many cell types. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Benson et al., J Immunol 153(9):3862-3873 (1994); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary T cells that may be used according to these assays include the NK-YT cell line, which is a human natural killer cell line with cytolytic and cytotoxic activity.</p>
80	HKAEV06	379	Regulation of viability and proliferation of pancreatic beta cells.	<p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ohtani KI, et al., Endocrinology, 139(1):172-8 (1998); Krautheim A, et al, Exp Clin Endocrinol Diabetes, 107 (1):29-34 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p>
80	HKAEV06	379	Activation of transcription through AP1 response	<p>Assays for the activation of transcription through the AP1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to modulate growth and other cell functions. Exemplary assays for transcription through the AP1 response element that may be used or routinely</p>

			<p>modified to test AP1-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1988); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Rellahan et al., J Biol Chem 272(49):30806-30811 (1997); Chang et al., Mol Cell Biol 18(9):4986-4993 (1998); and Fraser et al., Eur J Immunol 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. Human T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the SUPT cell line, which is an IL-2 and IL-4 responsive suspension-culture cell line.</p>
81	HKAFT66	380	<p>Assays for muscle cell proliferation are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit myoblast cell proliferation. Exemplary assays for myoblast cell proliferation that may be used or routinely modified to test activity of polypeptides and antibodies of the invention (including agonists or antagonists of the invention) include, for example, assays disclosed in: Soeta, C., et al. "Possible role for the c-ski gene in the proliferation of myogenic cells in regenerating skeletal muscles of rats" Dev Growth Differ Apr;43(2):155-64 (2001); Ewton DZ, et al., "TGF binding proteins-4, -5 and -6 may play specialized roles during L6 myoblast proliferation and differentiation" J Endocrinol Mar;144(3):539-53 (1995); and, Pampusch MS, et al., "Effect of transforming growth factor beta on proliferation of L6 and embryonic porcine myogenic cells" J Cell Physiol Jun;143(3):524-8 (1990); the contents of each of which are herein incorporated by reference in their entirety. Exemplary myoblast cells that may be used according to these assays include the rat myoblast L6 cell line. Rat myoblast L6 cells are an adherent rat myoblast cell line, isolated from primary cultures of rat thigh muscle, that fuse to form multinucleated myotubes and striated fibers after culture in differentiation media.</p>
81	HKAFT66	380	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., Endocr J, 47(3):261-9 (2000); Salapatek, A.M., et al., Mol Endocrinol, 13(8):1305-17 (1999); Filipsson, K., et al., Ann N Y Acad Sci, 865:441-4 (1998); Olson, L.K., et al., J Biol Chem, 271(28):16544-52 (1996); and, Miraglia S et al., Journal of</p>

81	HKAF66	380	<p>Activation of transcription through GATA-3 response element in immune cells (such as mast cells).</p>	<p>Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p> <p>This reporter assay measures activation of the GATA-3 signaling pathway in HMC-1 human mast cell line. Activation of GATA-3 in mast cells has been linked to cytokine and chemokine production. Assays for the activation of transcription through the GATA3 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate GATA3 transcription factors and modulate expression of mast cell genes important for immune response development. Exemplary assays for transcription through the GATA3 response element that may be used or routinely modified to test GATA3-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Flavell et al., Cold Spring Harb Symp Quant Biol 64:563-571 (1999); Rodriguez-Palmero et al., Eur J Immunol 29(12):3914-3924 (1999); Zheng and Flavell, Cell 89(4):587-596 (1997); and Henderson et al., Mol Cell Biol 14(6):4286-4294 (1994), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p> <p>This reporter assay measures activation of the NFAT signaling pathway in HMC-1 human mast cell line. Activation of NFAT in mast cells has been linked to cytokine and chemokine production. Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions. Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10</p>
81	HKAF66	380	<p>Activation of transcription through NFAT response element in immune cells (such as mast cells).</p>	

82	HKB1E57	381	Regulation of viability and proliferation of pancreatic beta cells.	<p>(1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); De Boer et al., <i>Int J Biochem Cell Biol</i> 31(10):1221-1236 (1999); Ali et al., <i>J Immunol</i> 165(12):7215-7223 (2000); Hutchinson and McCloskey, <i>J Biol Chem</i> 270(27):16333-16338 (1995), and Turner et al., <i>J Exp Med</i> 188:527-537 (1998), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p> <p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Friedrichsen BN, et al., <i>Mol Endocrinol</i>, 15(1):136-48 (2001); Huotari MA, et al., <i>Endocrinology</i>, 139(4):1494-9 (1998); Hugl SR, et al., <i>J Biol Chem</i> 1998 Jul 10;273(28):17771-9 (1998), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion.</p> <p>References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p>
83	HKFBC53	382	Regulation of transcription of Malic Enzyme in adipocytes	<p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and ME₂ identified as putative PPAR response elements. ME promoter may also respond to API and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeper, R.S., et al., <i>Mol Endocrinol</i>, 12(11):1778-91 (1998);</p>

84	HKGDL36	383	Regulation of viability and proliferation of pancreatic beta cells.	<p>Garcia-Jimenez, C., et al., Mol Endocrinol, 8(10):1361-9 (1994); Barroso, I., et al., J Biol Chem, 274(25):17997-8004 (1999); Ijpenberg, A., et al., J Biol Chem, 272(32):20108-20117 (1997); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays includes the H4IIE rat liver hepatoma cell line.</p> <p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Friedrichsen BN, et al., Mol Endocrinol, 15(1):136-48 (2001); Huotari MA, et al., Endocrinology, 139(4):1494-9 (1998); Hugl SR, et al., J Biol Chem 1998 Jul 10;273(28):17771-9 (1998), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion.</p> <p>References: Asfari et al. Endocrinology 1992 130:167.</p>
85	HKISB57	384	Activation of JNK Signaling Pathway in immune cells (such as eosinophils).	<p>Kinase assay. JNK kinase assays for signal transduction that regulate cell proliferation, activation, or apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit cell proliferation, activation, and apoptosis. Exemplary assays for JNK kinase activity that may be used or routinely modified to test JNK kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Forrer et al., Biol Chem 379(8-9):1101-1110 (1998); Gupta et al., Exp Cell Res 247(2): 495-504 (1999); Kyriakis JM, Biochem Soc Symp 64:29-48 (1999); Chang and Karin, Nature 410(6824):37-40 (2001); and Cobb MH, Prog Biophys Mol Biol 71(3-4):479-500 (1999); the contents of each of which are herein incorporated by reference in its entirety. Exemplary cells that may be used according to these assays include eosinophils. Eosinophils are important in the late stage of allergic reactions; they are</p>

				<p>recruited to tissues and mediate the inflammatory response of late stage allergic reaction. Moreover, exemplary assays that may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to modulate signal transduction, cell proliferation, activation, or apoptosis in eosinophils include assays disclosed and/or cited in: Zhang JP, et al., "Role of caspases in dexamethasone-induced apoptosis and activation of c-Jun NH2-terminal kinase and p38 mitogen-activated protein kinase in human eosinophils" Clin Exp Immunol; Oct;122(1):20-7 (2000); Hebestreit H, et al., "Disruption of fas receptor signaling by nitric oxide in eosinophils" J Exp Med; Feb 2;187(3):415-25 (1998); J Allergy Clin Immunol 1999 Sep;104(3 Pt 1):565-74; and, Sousa AR, et al., "In vivo resistance to corticosteroids in bronchial asthma is associated with enhanced phosphorylation of JUN N-terminal kinase and failure of prednisolone to inhibit JUN N-terminal kinase phosphorylation" J Allergy Clin Immunol; Sep;104(3 Pt 1):565-74 (1999); the contents of each of which are herein incorporated by reference in its entirety.</p> <p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and MED identified as putative PPAR response elements. ME promoter may also respond to AP1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeper, R.S., et al., Mol Endocrinol, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., Mol Endocrinol, 8(10):1361-9 (1994); Barros, I., et al., J Biol Chem, 274(25):17997-8004 (1999); Ijpenberg, A., et al., J Biol Chem, 272(32):20108-20117 (1997); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays includes the H4IIE rat liver hepatoma cell line.</p>
85	HKISB57	384	Regulation of transcription of Malic Enzyme in adipocytes	<p>Assays for muscle cell proliferation are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit myoblast cell proliferation. Exemplary assays for myoblast cell proliferation that may be used or routinely modified to test activity of polypeptides and antibodies of the invention (including agonists or antagonists of the invention) include, for example, assays disclosed in: Soeta, C., et al. "Possible role for the c-ski gene in the proliferation of myogenic cells in regenerating</p>
86	HKMLM11	385	Myoblast cell proliferation	

87	HKMMW74	386	Regulation of viability and proliferation of pancreatic beta cells.	<p>skeletal muscles of rats" <i>Dev Growth Differ</i> Apr;43(2):155-64 (2001); Ewton DZ, et al., "IGF binding proteins-4, -5 and -6 may play specialized roles during L6 myoblast proliferation and differentiation" <i>J Endocrinol Mar</i>;144(3):539-53 (1995); and, Pampusch MS, et al., "Effect of transforming growth factor beta on proliferation of L6 and embryonic porcine myogenic cells" <i>J Cell Physiol Jun</i>;143(3):524-8 (1990); the contents of each of which are herein incorporated by reference in their entirety. Exemplary myoblast cells that may be used according to these assays include the rat myoblast L6 cell line. Rat myoblast L6 cells are an adherent rat myoblast cell line, isolated from primary cultures of rat thigh muscle, that fuse to form multinucleated myotubes and striated fibers after culture in differentiation media.</p> <p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Friedrichsen BN, et al., <i>Mol Endocrinol</i>, 15(1):136-48 (2001); Huotari MA, et al., <i>Endocrinology</i>, 139(4):1494-9 (1998); Hugl SR, et al., <i>J Biol Chem</i> 1998 Jul 10;273(28):17771-9 (1998), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion.</p> <p>References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p>
88	HLDON23	387	Regulation of transcription through the PEPCK promoter in hepatocytes	<p>Assays for the regulation of transcription through the PEPCK promoter are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the PEPCK promoter in a reporter construct and regulate liver gluconeogenesis. Exemplary assays for regulation of transcription through the PEPCK promoter that may be used or routinely modified to test for PEPCK promoter activity (in hepatocytes) of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); Lochhead et al., <i>Diabetes</i> 49(6):896-903 (2000); and Yeagley et al., <i>J Biol Chem</i> 275(23):17814-17820 (2000), the</p>

88	HLDON23	387	Production of VCAM in endothelial cells (such as human umbilical vein endothelial cells (HUVEC))	<p>contents of each of which is herein incorporated by reference in its entirety. Hepatocyte cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary liver hepatoma cells that may be used according to these assays include H4Ile cells, which contain a tyrosine amino transferase that is inducible with glucocorticoids, insulin, or cAMP derivatives.</p> <p>Assays for measuring expression of VCAM are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate VCAM expression. For example, FMAT may be used to measure the upregulation of cell surface VCAM-1 expression in endothelial cells. Endothelial cells are cells that line blood vessels, and are involved in functions that include, but are not limited to, angiogenesis, vascular permeability, vascular tone, and immune cell extravasation. Exemplary endothelial cells that may be used according to these assays include human umbilical vein endothelial cells (HUVEC), which are available from commercial sources. The expression of VCAM (CD106), a membrane-associated protein, can be upregulated by cytokines or other factors, and contributes to the extravasation of lymphocytes, leucocytes and other immune cells from blood vessels; thus VCAM expression plays a role in promoting immune and inflammatory responses.</p>
88	HLDON23	387	Production of ICAM-1	<p>Assays for measuring expression of ICAM-1 are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate ICAM-1 expression. Exemplary assays that may be used or routinely modified to measure ICAM-1 expression include assays disclosed in: Takacs P, et al, FASEB J, 15(2):279-281 (2001); and, Miyamoto K, et al., Am J Pathol, 156(5):1733-1739 (2000), the contents of each of which is herein incorporated by reference in its entirety. Cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include microvascular endothelial cells (MVEC).</p>
88	HLDON23	387	Production of IL-10 and activation of T-cells.	<p>Assays for production of IL-10 and activation of T-cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit production of IL-10 and/or activation of T-cells. Exemplary assays that may be used or routinely modified to assess the ability of polypeptides and antibodies of the invention (including agonists or antagonists of the invention) to modulate IL-10 production and/or T-cell proliferation include, for example, assays such as disclosed and/or cited in: Robinson, DS, et al., "Th-2 cytokines in allergic disease" Br Med Bull; 56 (4): 956-968 (2000), and Cohn, et al., "T-helper type 2 cell-directed therapy for asthma" Pharmacology & Therapeutics; 88: 187-196 (2000); the contents of each of which are herein incorporated by reference in their entirety.</p>

89	HLDQR62	388	Regulation of viability and proliferation of pancreatic beta cells.	<p>Exemplary cells that may be used according to these assays include Th2 cells. IL10 secreted from Th2 cells may be measured as a marker of Th2 cell activation. Th2 cells are a class of T cells that secrete IL4, IL10, IL13, IL5 and IL6. Factors that induce differentiation and activation of Th2 cells play a major role in the initiation and pathogenesis of allergy and asthma. Primary T helper 2 cells are generated via in vitro culture under Th2 polarizing conditions using peripheral blood lymphocytes isolated from cord blood.</p> <p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Friedrichsen BN, et al., Mol Endocrinol, 15(1):136-48 (2001); Huotari MA, et al., Endocrinology, 139(4):1494-9 (1998); Hugi SR, et al., J Biol Chem 1998 Jul 10;273(28):17771-9 (1998), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. Endocrinology 1992 130:167.</p>
89	HLDQR62	388	Activation of transcription through cAMP response element in immune cells (such as T-cells).	<p>Assays for the activation of transcription through the cAMP response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to increase cAMP and regulate CREB transcription factors, and modulate expression of genes involved in a wide variety of cell functions. Exemplary assays for transcription through the cAMP response element that may be used or routinely modified to test cAMP-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Black et al., Virus Genes 15(2):105-117 (1997); and Belkowski et al., J Immunol 161(2):659-665 (1998), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell</p>

90	HLDQU79	389	Regulation of viability and proliferation of pancreatic beta cells.	<p>line, which is a suspension culture of IL-2 dependent cytotoxic T cells.</p> <p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Friedrichsen BN, et al., <i>Mol Endocrinol</i>, 15(1):136-48 (2001); Huotari MA, et al., <i>Endocrinology</i>, 139(4):1494-9 (1998); Hugl SR, et al., <i>J Biol Chem</i> 1998 Jul 10;273(28):17771-9 (1998), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion.</p> <p>References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p>
90	HLDQU79	389	Activation of transcription through serum response element in immune cells (such as T-cells).	<p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate the serum response factors and modulate the expression of genes involved in growth. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); and Black et al., <i>Virus Genes</i> 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell line, which is an IL-2 dependent suspension culture of T cells with cytotoxic activity.</p>
91	HLHAL68	390	Regulation of viability and proliferation of pancreatic beta cells.	<p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically</p>

92	HLIBD68	391	Production of TNF alpha by dendritic cells	<p>active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Friedrichsen BN, et al., Mol Endocrinol, 15(1):136-48 (2001); Huotari MA, et al., Endocrinology, 139(4):1494-9 (1998); Hugl SR, et al., J Biol Chem 1998 Jul 10;273(28):17771-9 (1998), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. Endocrinology 1992 130:167.</p> <p>TNFα FMAAT. Assays for immunomodulatory proteins produced by activated macrophages, T cells, fibroblasts, smooth muscle, and other cell types that exert a wide variety of inflammatory and cytotoxic effects on a variety of cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation, modulate inflammation and cytotoxicity. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines such as tumor necrosis factor alpha (TNFα), and the induction or inhibition of an inflammatory or cytotoxic response. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); Verhasselt et al., Eur J Immunol 28(11):3886-3890 (1998); Dahlen et al., J Immunol 160(7):3585-3593 (1998); Verhasselt et al., J Immunol 158:2919-2925 (1997); and Nardelli et al., J Leukoc Biol 65:822-828 (1999), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.</p> <p>MIP-1α FMAAT. Assays for immunomodulatory proteins produced by activated dendritic cells that upregulate monocyte/macrophage and T cell chemotaxis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation, modulate chemotaxis, and modulate T cell differentiation. Exemplary assays that test for immunomodulatory proteins evaluate the production of chemokines, such as macrophage inflammatory protein 1 α (MIP-1α), and the</p>
92	HLIBD68	391	Production of MIP1 α	<p>MIP-1α FMAAT. Assays for immunomodulatory proteins produced by activated dendritic cells that upregulate monocyte/macrophage and T cell chemotaxis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation, modulate chemotaxis, and modulate T cell differentiation. Exemplary assays that test for immunomodulatory proteins evaluate the production of chemokines, such as macrophage inflammatory protein 1 α (MIP-1α), and the</p>

				activation of monocytes/macrophages and T cells. Such assays that may be used or routinely modified to test immunomodulatory and chemotaxis activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., <i>J Biomolecular Screening</i> 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); Sathaporn and Erenin, <i>J R Coll Surg Ednb</i> 45(1):9-19 (2001); Drakes et al., <i>Transp Immunol</i> 8(1):17-29 (2000); Verhasselt et al., <i>J Immunol</i> 158:2919-2925 (1997); and Nardelli et al., <i>J Leukoc Biol</i> 65:822-828 (1999), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.
92	HLIBD68	391	Production of IL-6	IL-6 F/MAT. IL-6 is produced by T cells and has strong effects on B cells. IL-6 participates in IL-4 induced IgE production and increases IgA production (IgA plays a role in mucosal immunity). IL-6 induces cytotoxic T cells. Deregulated expression of IL-6 has been linked to autoimmune disease, plasmacytomas, myelomas, and chronic hyperproliferative diseases. Assays for immunomodulatory and differentiation factor proteins produced by a large variety of cells where the expression level is strongly regulated by cytokines, growth factors, and hormones are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation and differentiation and modulate T cell proliferation and function. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines, such as IL-6, and the stimulation and upregulation of T cell proliferation and functional activities. Such assays that may be used or routinely modified to test immunomodulatory and differentiation activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., <i>J Biomolecular Screening</i> 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); and Verhasselt et al., <i>J Immunol</i> 158:2919-2925 (1997), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.
92	HLIBD68	391	Stimulation of insulin secretion from pancreatic beta cells.	Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by F/MAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by

93	HLICQ90	392	Activation of transcription through serum response element in immune cells (such as T-cells).	<p>glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated.</p> <p>Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate the serum response factors and modulate the expression of genes involved in growth. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); and Black et al., <i>Virus Genes</i> 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell line, which is an IL-2 dependent suspension culture of T cells with cytotoxic activity.</p> <p>TNFα FMAT. Assays for immunomodulatory proteins produced by activated macrophages, T cells, fibroblasts, smooth muscle, and other cell types that exert a wide variety of inflammatory and cytotoxic effects on a variety of cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation, modulate inflammation and cytotoxicity. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines such as tumor necrosis factor alpha (TNFα), and the induction or inhibition of an inflammatory or cytotoxic response. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., <i>J Biomolecular Screening</i> 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach"</p>
93	HLICQ90	392	Production of TNF alpha by dendritic cells	

93	HLICQ90	392	Stimulation of Calcium Flux in pancreatic beta cells.	<p>Chapter 6:138-160 (2000); Verhasselt et al., Eur J Immunol 28(11):3886-3890 (1198); Dahlen et al., J Immunol 160(7):3585-3593 (1998); Verhasselt et al., J Immunol 158:2919-2925 (1997); and Nardelli et al., J Leukoc Biol 65:822-828 (1999), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.</p> <p>Assays for measuring calcium flux are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mobilize calcium. For example, the FLPR assay may be used to measure influx of calcium. Cells normally have very low concentrations of cytosolic calcium compared to much higher extracellular calcium. Extracellular factors can cause an influx of calcium, leading to activation of calcium responsive signaling pathways and alterations in cell functions. Exemplary assays that may be used or routinely modified to measure calcium flux by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Satin L.S., et al., Endocrinology, 136(10):4589-601 (1995); Mogami H., et al., Endocrinology, 136(7):2960-6 (1995); Richardson SB, et al., Biochem J, 288 (Pt 3):847-51 (1992); and, Meats, JE, et al., Cell Calcium 1989 Nov-Dec;10(8):535-41 (1989), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p>
93	HLICQ90	392	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and downregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li, M., et al., Endocrinology, 138(9):3735-40 (1997); Kim, K.H., et al., FEBS Lett, 377(2):237-9 (1995);</p>

94	HLTHR66	393	Stimulation of insulin secretion from pancreatic beta cells.	<p>and, Miraglia S et. al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. Endocrinology 1992 130:167.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li, M., et al., Endocrinology, 138(9):3735-40 (1997); Kim, K.H., et al., FEBS Lett, 377(2):237-9 (1995); and, Miraglia S et. al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. Endocrinology 1992 130:167.</p>
95	HLTIP94	394	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li, M., et al., Endocrinology, 138(9):3735-40 (1997); Kim, K.H., et al., FEBS Lett, 377(2):237-9 (1995); and, Miraglia S et. al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to</p>

96	HLWAA17	395	Regulation of transcription of Malic Enzyme in adipocytes	<p>these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and MED identified as putative PPAR response elements. ME promoter may also respond to AP1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeter, R.S., et al., <i>Mol Endocrinol</i>, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., <i>Mol Endocrinol</i>, 8(10):1361-9 (1994); Barroso, I., et al., <i>J Biol Chem</i>, 274(25):17997-8004 (1999); Ijpenberg, A., et al., <i>J Biol Chem</i>, 272(32):20108-20117 (1997); Berger, et al., <i>Gene</i> 66:1-10 (1988); and, Cullen, B., et al., <i>Methods in Enzymol</i>. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays includes the H4IIE rat liver hepatoma cell line.</p>
96	HLWAA17	395	Production of ICAM-1	<p>Assays for measuring expression of ICAM-1 are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate ICAM-1 expression. Exemplary assays that may be used or routinely modified to measure ICAM-1 expression include assays disclosed in: Takacs P, et al, FASEB J, 15(2):279-281 (2001); and, Miyamoto K, et al., <i>Am J Pathol</i>, 156(5):1733-1739 (2000), the contents of each of which is herein incorporated by reference in its entirety. Cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include microvascular endothelial cells (MVEC).</p>
97	HL YAC95	396	Production of IFNgamma using a T cells	<p>IFNgamma FMAT. IFNg plays a central role in the immune system and is considered to be a proinflammatory cytokine. IFNg promotes TH1 and inhibits TH2 differentiation; promotes IgG2a and inhibits IgE secretion; induces macrophage activation; and increases MHC expression. Assays for immunomodulatory proteins produced by T cells and NK cells that regulate a variety of inflammatory</p>

97	HLIYAC95	396	Stimulation of insulin secretion from pancreatic beta cells.	<p>activities and inhibit TH2 helper cell functions are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation, regulate inflammatory activities, modulate TH2 helper cell function, and/or mediate humoral or cell-mediated immunity. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines, such as Interferon gamma (IFNg), and the activation of T cells. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204 (1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); Gonzalez et al., J Clin Lab Anal 8(5):225-233 (1995); Billiau et al., Ann NY Acad Sci 856:22-32 (1998); Boehm et al., Annu Rev Immunol 15:749-795 (1997), and Rheumatology (Oxford) 38(3):214-20 (1999), the contents of each of which are herein incorporated by reference in its entirety. Human T cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human T cells are primary human lymphocytes that mature in the thymus and express a T Cell receptor and CD3, CD4, or CD8. These cells mediate humoral or cell-mediated immunity and may be preactivated to enhance responsiveness to immunomodulatory factors.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li, M., et al., Endocrinology, 138(9):3735-40 (1997); Kim, K.H., et al., FEBS Lett, 377(2):237-9 (1995); and, Miraglia S et al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. Endocrinology 1992 130:167.</p> <p>Assays for the regulation of transcription through the PEPCK promoter are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including</p>
98	HMADK33	397	Regulation of transcription	

			through the PEPCK promoter in hepatocytes	antibodies and agonists or antagonists of the invention) to activate the PEPCK promoter in a reporter construct and regulate liver gluconeogenesis. Exemplary assays for regulation of transcription through the PEPCK promoter that may be used or routinely modified to test for PEPCK promoter activity (in hepatocytes) of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Lochhead et al., Diabetes 49(6):896-903 (2000); and Yeagley et al., J Biol Chem 275(23):17814-17820 (2000), the contents of each of which is herein incorporated by reference in its entirety. Hepatocyte cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary liver hepatoma cells that may be used according to these assays include H4Ile cells, which contain a tyrosine amino transferase that is inducible with glucocorticoids, insulin, or cAMP derivatives.
99	HMAMI15	398	Stimulation of Calcium Flux in pancreatic beta cells.	Assays for measuring calcium flux are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mobilize calcium. For example, the FLPR assay may be used to measure influx of calcium. Cells normally have very low concentrations of cytosolic calcium compared to much higher extracellular calcium. Extracellular factors can cause an influx of calcium, leading to activation of calcium responsive signaling pathways and alterations in cell functions. Exemplary assays that may be used or routinely modified to measure calcium flux by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Satin LS, et al., Endocrinology, 136(10):4589-601 (1995); Mogami H, et al., Endocrinology, 136(7):2960-6 (1995); Richardson SB, et al., Biochem J, 288 (Pt 3):847-51 (1992); and, Meats, JE, et al., Cell Calcium 1989 Nov-Dec;10(8):535-41 (1989), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.
99	HMAMI15	398	Upregulation of CD152 and activation of T cells	CD152 FMAT. CD152 (a.k.a. CTLA-4) expression is restricted to activated T cells. CD152 is a negative regulator of T cell proliferation. Reduced CD152 expression has been linked to hyperproliferative and autoimmune diseases. Overexpression of CD152 may lead to impaired immunoresponses. Assays for immunomodulatory proteins important in the maintenance of T cell

100	HMCIFY13	399	Regulation of transcription via DMEF1 response element in adipocytes and pre-adipocytes	<p>homeostasis and expressed almost exclusively on CD4+ and CD8+ T cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to modulate the activation of T cells, maintain T cell homeostasis, and/or mediate humoral or cell-mediated immunity. Exemplary assays that test for immunomodulatory proteins evaluate the upregulation of cell surface markers, such as CD152, and the activation of T cells. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include, for example, the assays disclosed in Miraglia et al., <i>J Biomolecular Screening</i> 4:193-204 (1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); McCoy et al., <i>Immunol Cell Biol</i> 77(1):1-10 (1999); Oosterveeg et al., <i>Curr Opin Immunol</i> 11(3):294-300 (1999); and Saito T, <i>Curr Opin Immunol</i> 10(3):313-321 (1998), the contents of each of which are herein incorporated by reference in its entirety. Human T cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human T cells are primary human lymphocytes that mature in the thymus and express a T Cell receptor and CD3, CD4, or CD8. These cells mediate humoral or cell-mediated immunity and may be preactivated to enhance responsiveness to immunomodulatory factors.</p> <p>Assays for the regulation of transcription through the DMEF1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the DMEF1 response element in a reporter construct (such as that containing the GLUT4 promoter) and to regulate insulin production. The DMEF1 response element is present in the GLUT4 promoter and binds to MEF2 transcription factor and another transcription factor that is required for insulin regulation of Glut4 expression in skeletal muscle. GLUT4 is the primary insulin-responsive glucose transporter in fat and muscle tissue. Exemplary assays that may be used or routinely modified to test for DMEF1 response element activity (in adipocytes and pre-adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Thai, M.V., et al., <i>J Biol Chem</i>, 273(23):14285-92 (1998); Mora, S., et al., <i>J Biol Chem</i>, 275(21):16323-8 (2000); Liu, M.L., et al., <i>J Biol Chem</i>, 269(45):28514-21 (1994); "Identification of a 30-base pair regulatory element and novel DNA binding protein that regulates the human GLUT4 promoter in transgenic mice", <i>J Biol Chem</i>, 2000 Aug 4;275(31):23666-73; Berger, et al., <i>Gene</i> 66:1-10 (1988); and, Cullen, B., et al., <i>Methods in Enzymol.</i> 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Adipocytes and pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include the mouse 3T3-L1 cell line which is an adherent mouse preadipocyte cell line. Mouse 3T3-L1 cells are a continuous</p>
-----	----------	-----	---	---

101	HMDAB56	400	Regulation of transcription through the PEPCK promoter in hepatocytes	<p>substrain of 3T3 fibroblasts developed through clonal isolation. These cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p> <p>Assays for the regulation of transcription through the PEPCK promoter are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the PEPCK promoter in a reporter construct and regulate liver gluconeogenesis. Exemplary assays for regulation of transcription through the PEPCK promoter that may be used or routinely modified to test for PEPCK promoter activity (in hepatocytes) of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Lochhead et al., Diabetes 49(6):896-903 (2000); and Yeagley et al., J Biol Chem 275(23):17814-17820 (2000), the contents of each of which is herein incorporated by reference in its entirety. Hepatocyte cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary liver hepatoma cells that may be used according to these assays include H4IIE cells, which contain a tyrosine amino transferase that is inducible with glucocorticoids, insulin, or cAMP derivatives.</p>
102	HMEED18	401	Production of IL6 by primary human aortic smooth muscle or normal human dermal fibroblast cells (without or with costimulation with TNFalpha).	<p>Assay to measure regulation of production of Interleukin-6 (IL-6) by either human aortic smooth muscle cells or normal human dermal fibroblasts minus or plus costimulation with TNFalpha (TNFa). Human aortic smooth muscle cells or normal human dermal fibroblasts may be obtained from commercial sources; these cells are important structural and functional components of blood vessels and connective tissue, respectively. Interleukin-6 (IL-6) is a key molecule in chronic inflammation and has been implicated in the progression of atherosclerosis, stroke, arthritis and other vascular and inflammatory diseases. Deregulated expression of IL-6 has been linked to autoimmune disease, plasmacytomas, myelomas, and chronic hyperproliferative diseases. Assays for immunomodulatory and differentiation factor proteins produced by a large variety of cells where the expression level is strongly regulated by cytokines, growth factors, and hormones are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation and production of IL-6.</p>
102	HMEED18	401	Stimulation of Calcium Flux in pancreatic beta cells.	<p>Assays for measuring calcium flux are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mobilize calcium. For example, the FLPR assay may be used to measure influx of calcium. Cells normally have very low concentrations of cytosolic calcium compared to much higher extracellular calcium. Extracellular factors can cause an influx of calcium, leading to activation of calcium responsive signaling pathways and alterations in cell functions. Exemplary assays that may be used or routinely</p>

102	HMEED18	401	Upregulation of CD69 and activation of T cells	<p>modified to measure calcium flux by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Satin L.S. et al., <i>Endocrinology</i>, 136(10):4589-601 (1995); Mogami H. et al., <i>Endocrinology</i>, 136(7):2960-6 (1995); Richardson SB, et al., <i>Biochem J</i>, 288 (Pt 3):847-51 (1992); and, Meats, JE, et al., <i>Cell Calcium</i> 1989 Nov-Dec;10(8):535-41 (1989), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT T15 Cells. HIT T15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J.</i> 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p> <p>CD69 FMAT. CD69 is an activation marker that is expressed on activated T cells, B cells, and NK cells. CD69 is not expressed on resting T cells, B cells, or NK cells. CD69 has been found to be associated with inflammation. Assays for immunomodulatory proteins expressed in T cells, B cells, and leukocytes are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to modulate the activation of T cells, and/or mediate humoral or cell-mediated immunity. Exemplary assays that test for immunomodulatory proteins evaluate the upregulation of cell surface markers, such as CD69, and the activation of T cells. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include, for example, the assays disclosed in Miraglia et al., <i>J Biomolecular Screening</i> 4:193-204 (1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); Ferenczi et al., <i>J Autoimmun</i> 14(1):63-78 (2000); Werfel et al., <i>Allergy</i> 52(4):465-469 (1997); Taylor-Fishwick and Siegel, <i>Eur J Immunol</i> 25(12):3215-3221 (1995); and Afetra et al., <i>Ann Rheum Dis</i> 52(6):457-460 (1993), the contents of each of which are herein incorporated by reference in its entirety. Human T cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human T cells are primary human lymphocytes that mature in the thymus and express a T Cell receptor and CD3, CD4, or CD8. These cells mediate humoral or cell-mediated immunity and may be preactivated to enhance responsiveness to immunomodulatory factors.</p> <p>Caspase Apoptosis. Assays for caspase apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote caspase protease-mediated apoptosis. Apoptosis in pancreatic beta is associated with induction and progression of diabetes. Exemplary assays for caspase</p>
103	HMEFT54	402	Regulation of apoptosis in pancreatic beta cells.	

104	HMEGF92	403	Production of ICAM in endothelial cells (such as human umbilical vein endothelial cells (HUVCE))	<p>apoptosis that may be used or routinely modified to test caspase apoptosis activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in: Loweth, AC, et al., FEBS Lett, 400(3):285-8 (1997); Saini, KS, et al., Biochem Mol Biol Int, 39(6):1229-36 (1996); Krauthelm, A., et al., Br J Pharmacol, 129(4):687-94 (2000); Chandra J, et al., Diabetes, 50 Suppl 1:S44-7 (2001); Suk K, et al., J Immunol, 166(7):4481-9 (2001); Tejedo J, et al., FEBS Lett, 459(2):238-43 (1999); Zhang, S., et al., FEBS Lett, 455(3):315-20 (1999); Lee et al., FEBS Lett 485(2-3): 122-126 (2000); Nor et al., J Vasc Res 37(3): 209-218 (2000); and Karsan and Harlan, J Atheroscler Thromb 3(2): 75-80 (1996); the contents of each of which are herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include RIN-m. RIN-m is a rat adherent pancreatic beta cell insulinoma cell line derived from a radiation induced transplantable rat islet cell tumor. The cells produce and secrete islet polypeptide hormones, and produce insulin, somatostatin, and possibly glucagon. ATCC: #CRL-2057 Chick et al. Proc. Natl. Acad. Sci. 1977 74:628; AF et al. Proc. Natl. Acad. Sci. 1980 77:3519.</p> <p>Endothelial cells, which are cells that line blood vessels, and are involved in functions that include, but are not limited to, angiogenesis, vascular permeability, vascular tone, and immune cell extravasation. Exemplary endothelial cells that may be used in ICAM production assays include human umbilical vein endothelial cells (HUVCE), and are available from commercial sources. The expression of ICAM (CD54), a integral membrane protein, can be upregulated by cytokines or other factors, and ICAM expression is important in mediating immune and endothelial cell interactions leading to immune and inflammatory responses. Assays for measuring expression of ICAM-1 are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate ICAM-1 expression. Exemplary assays that may be used or routinely modified to measure ICAM-1 expression include assays disclosed in: Rolfe BE, et al., Atherosclerosis, 149(1):99-110 (2000); Panetier RA Jr, et al., J Immunol, 154(5):2358-2365 (1995); and, Grunstein MM, et al., Am J Physiol Lung Cell Mol Physiol, 278(6):L1154-L1163 (2000), the contents of each of which is herein incorporated by reference in its entirety.</p>
104	HMEGF92	403	Regulation of apoptosis in pancreatic beta cells.	<p>Caspase Apoptosis. Assays for caspase apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote caspase protease-mediated apoptosis. Apoptosis in pancreatic beta is associated with induction and progression of diabetes. Exemplary assays for caspase apoptosis that may be used or routinely modified to test caspase apoptosis activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed</p>

				<p>in: Loweth, AC, et al., FEBS Lett, 400(3):285-8 (1997); Saini, KS, et al., Biochem Mol Biol Int, 39(6):1229-36 (1996); Krauthelm, A., et al., Br J Pharmacol, 129(4):687-94 (2000); Chandra J, et al., Diabetes, 50 Suppl 1:S44-7 (2001); Suk K, et al., J Immunol, 166(7):4481-9 (2001); Tejedo J, et al., FEBS Lett, 459(2):238-43 (1999); Zhang, S., et al., FEBS Lett, 455(3):315-20 (1999); Lee et al., FEBS Lett 485(2-3): 122-126 (2000); Nor et al., J Vasc Res 37(3): 209-218 (2000); and Karsan and Harlan, J Atheroscler Thromb 3(2): 75-80 (1996); the contents of each of which are herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include RIN-m. RIN-m is a rat adherent pancreatic beta cell insulinoma cell line derived from a radiation induced transplantable rat islet cell tumor. The cells produce and secrete islet polypeptide hormones, and produce insulin, somatostatin, and possibly glucagon. ATTC: #CRL-2057 Chick et al. Proc. Natl. Acad. Sci. 1977 74:628; AF et al. Proc. Natl. Acad. Sci. 1980 77:3519.</p>
105	HMSDL37	404	Regulation of viability and proliferation of pancreatic beta cells.	<p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Friedrichsen BN, et al., Mol Endocrinol, 15(1):136-48 (2001); Huotari MA, et al., Endocrinology, 139(4):1494-9 (1998); Hugl SR, et al., J Biol Chem 1998 Jul 10;273(28):17771-9 (1998), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. Endocrinology 1992 130:167.</p>
106	HMSFI26	405	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes.</p>

107	HMVBS81	406	Stimulation of insulin secretion from pancreatic beta cells.	<p>Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p>
108	HMWDC28	407	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p>

109	HMWFT65	408	Regulation of transcription via DMEF1 response element in adipocytes and pre-adipocytes	<p>invention) include assays disclosed in: Alren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995); and, Miraglia S et. al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>Assays for the regulation of transcription through the DMEF1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the DMEF1 response element in a reporter construct (such as that containing the GLUT4 promoter) and to regulate insulin production. The DMEF1 response element is present in the GLUT4 promoter and binds to MEF2 transcription factor and another transcription factor that is required for insulin regulation of Glut4 expression in skeletal muscle. GLUT4 is the primary insulin-responsive glucose transporter in fat and muscle tissue. Exemplary assays that may be used or routinely modified to test for DMEF1 response element activity (in adipocytes and pre-adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Thai, M.V., et al., <i>J Biol Chem</i>, 273(23):14285-92 (1998); Mora, S., et al., <i>J Biol Chem</i>, 275(21):16323-8 (2000); Liu, M.L., et al., <i>J Biol Chem</i>, 269(45):28514-21 (1994); "Identification of a 30-base pair regulatory element and novel DNA binding protein that regulates the human GLUT4 promoter in transgenic mice", <i>J Biol Chem</i>, 2000 Aug 4;275(31):23666-73; Berger, et al., <i>Gene</i> 66:1-10 (1988); and, Cullen, B., et al., <i>Methods in Enzymol.</i> 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Adipocytes and pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include the mouse 3T3-L1 cell line which is an adherent mouse preadipocyte cell line. Mouse 3T3-L1 cells are a continuous substrain of 3T3 fibroblasts developed through clonal isolation. These cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p>
110	HNEEE24	409	Insulin Secretion	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and downregulation is a key component in diabetes.</p>

111	HNFFC43	410	Regulation of transcription via DMEF1 response element in adipocytes and pre-adipocytes	<p>Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., <i>Endocr J</i>, 47(3):261-9 (2000); Salapatek, A.M., et al., <i>Mol Endocrinol</i>, 13(8):1305-17 (1999); Filipsson, K., et al., <i>Ann N Y Acad Sci</i>, 865:441-4 (1998); Olson, L.K., et al., <i>J Biol Chem</i>, 271(28):16544-52 (1996); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem J</i>, 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p> <p>Assays for the regulation of transcription through the DMEF1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the DMEF1 response element in a reporter construct (such as that containing the GLUT4 promoter) and to regulate insulin production. The DMEF1 response element is present in the GLUT4 promoter and binds to MEF2 transcription factor and another transcription factor that is required for insulin regulation of Glut4 expression in skeletal muscle. GLUT4 is the primary insulin-responsive glucose transporter in fat and muscle tissue. Exemplary assays that may be used or routinely modified to test for DMEF1 response element activity (in adipocytes and pre-adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Thai, M.V., et al., <i>J Biol Chem</i>, 273(23):14285-92 (1998); Mora, S., et al., <i>J Biol Chem</i>, 275(21):16323-8 (2000); Liu, M.L., et al., <i>J Biol Chem</i>, 269(45):28514-21 (1994); "Identification of a 30-base pair regulatory element and novel DNA binding protein that regulates the human GLUT4 promoter in transgenic mice", <i>J Biol Chem</i>, 2000 Aug 4;275(31):23666-73; Berger, et al., <i>Gene</i> 66:1-10 (1988); and, Cullen, B., et al., <i>Methods in Enzymol</i>, 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Adipocytes and pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include the mouse 3T3-L1 cell line which is an adherent mouse preadipocyte cell line. Mouse 3T3-L1 cells are a continuous substrain of 3T3 fibroblasts developed through clonal isolation. These cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p> <p>Assays for the regulation (i.e. increases or decreases) of viability and proliferation of cells in vitro are</p>
111	HNFFC43	410	Proliferation of	

111	HNFFC43	410	immune cells (such as the HMC-1 human mast cell line)	<p>well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of eosinophil cells and cell lines. For example, the CellTiter-Glo[®] Luminescent Cell Viability Assay (Promega Corp., Madison, WI, USA) can be used to measure the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Mast cells are found in connective and mucosal tissues throughout the body. Mast cell activation (via immunoglobulin E -antigen, promoted by T helper cell type 2 cytokines) is an important component of allergic disease. Dysregulation of mast cell apoptosis may play a role in allergic disease and mast cell tumor survival. Mast cell lines that may be used according to these assays are publicly available and/or may be routinely generated. Exemplary mast cells that may be used according to these assays include HMC-1, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p> <p>Kinase assay. JNK and p38 kinase assays for signal transduction that regulate cell proliferation, activation, or apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit immune cell (e.g. T-cell) proliferation, activation, and apoptosis. Exemplary assays for JNK and p38 kinase activity that may be used or routinely modified to test JNK and p38 kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Forrer et al., Biol Chem 379(8-9):1101-1110 (1998); Gupta et al., Exp Cell Res 247(2): 495-504 (1999); Kyriakis JM, Biochem Soc Symp 64:29-48 (1999); Chang and Karin, Nature 410(6824):37-40 (2001); and Cobb MH, Prog Biophys Mol Biol 71(3-4):479-500 (1999); the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTL.L cell line, which is an IL-2 dependent suspension-culture cell line with cytotoxic activity.</p> <p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and ME_Δ identified as putative PPAR response elements. ME promoter may also respond to AP1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeper, R.S., et al., Mol Endocrinol, 12(11):1778-91 (1998);</p>
111	HNFFC43	410	Regulation of transcription of Malic Enzyme in adipocytes	

112	HNF1Y77	411	Insulin Secretion	<p>Garcia-Jimenez, C., et al., Mol Endocrinol, 8(10):1361-9 (1994); Barroso, I., et al., J Biol Chem, 274(25):17997-8004 (1999); Ijpenberg, A., et al., J Biol Chem, 272(32):20108-20117 (1997); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays includes the H4IIE rat liver hepatoma cell line.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., Endocr J, 47(3):261-9 (2000); Salapatek, A.M., et al., Mol Endocrinol, 13(8):1305-17 (1999); Filipsson, K., et al., Ann N Y Acad Sci, 865:441-4 (1998); Olson, L.K., et al., J Biol Chem, 271(28):16544-52 (1996); and, Miraglia S et al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT-T15 Cells. HIT-T15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft, Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p> <p>Assays for the regulation of transcription through the DMEF1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the DMEF1 response element in a reporter construct (such as that containing the GLUT4 promoter) and to regulate insulin production. The DMEF1 response element is present in the GLUT4 promoter and binds to MEF2 transcription factor and another transcription factor that is required for insulin regulation of Glut4 expression in skeletal muscle. GLUT4 is the primary insulin-responsive glucose transporter in fat and muscle tissue. Exemplary assays that may be used or routinely modified to test for DMEF1 response element activity (in adipocytes and pre-adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the</p>
113	HNF1F07	412	Regulation of transcription via DMEF1 response element in adipocytes and pre-adipocytes	

113	HNFJF07	412	Regulation of viability and proliferation of pancreatic beta cells.	<p>invention) include assays disclosed in Thai, M.V., et al., J Biol Chem, 273(23):14285-92 (1998); Mora, S., et al., J Biol Chem, 275(21):16323-8 (2000); Liu, M.L., et al., J Biol Chem, 269(45):28514-21 (1994); "Identification of a 30-base pair regulatory element and novel DNA binding protein that regulates the human GLUT4 promoter in transgenic mice", J Biol Chem. 2000 Aug 4;275(31):23666-73; Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Adipocytes and pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include the mouse 3T3-L1 cell line which is an adherent mouse preadipocyte cell line. Mouse 3T3-L1 cells are a continuous substrain of 3T3 fibroblasts developed through clonal isolation. These cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p> <p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Friedrichsen BN, et al., Mol Endocrinol, 15(1):136-48 (2001); Huotari MA, et al., Endocrinology, 139(4):1494-9 (1998); Hugl SR, et al., J Biol Chem 1998 Jul 10;273(28):17771-9 (1998), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion.</p> <p>References: Asfari et al. Endocrinology 1992 130:167.</p>
113	HNFJF07	412	Activation of transcription through serum response element in immune cells (such as T-	<p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate the serum response factors and modulate the expression of genes involved in growth. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al.,</p>

113	HNFJF07	412	Stimulation of insulin secretion from pancreatic beta cells.	<p>cells).</p> <p>Proc Natl Acad Sci USA 85:6342-6346 (1988); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell line, which is an IL-2 dependent suspension culture of T cells with cytotoxic activity.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li, M., et al., Endocrinology, 138(9):3735-40 (1997); Kim, K.H., et al., FEBS Lett, 377(2):237-9 (1995); and, Miraglia S et. al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. Endocrinology 1992 130:167.</p>
114	HNGFR31	413	Insulin Secretion	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., Endocr J, 47(3):261-9 (2000); Salapatek, A.M., et al., Mol Endocrinol, 13(8):1305-17 (1999); Filipsson, K., et al., Ann N Y Acad Sci, 865:441-4 (1998); Olson, L.K., et al., J Biol Chem, 271(28):16544-52 (1996); and, Miraglia S et. al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that</p>

115	HNGII31	414	Activation of transcription through cAMP response element in immune cells (such as T-cells).	<p>may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p> <p>Assays for the activation of transcription through the cAMP response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to increase cAMP and regulate CREB transcription factors, and modulate expression of genes involved in a wide variety of cell functions. Exemplary assays for transcription through the cAMP response element that may be used or routinely modified to test cAMP-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Black et al., Virus Genes 15(2):105-117 (1997); and Belkowski et al., J Immunol 161(2):659-665 (1998), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTL-L cell line, which is a suspension culture of IL-2 dependent cytotoxic T cells.</p>
115	HNGII31	414	Production of MCP-1	<p>MCP-1 FMAT. Assays for immunomodulatory proteins that are produced by a large variety of cells and act to induce chemotaxis and activation of monocytes and T cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation, induce chemotaxis, and modulate immune cell activation. Exemplary assays that test for immunomodulatory proteins evaluate the production of cell surface markers, such as monocyte chemoattractant protein (MCP), and the activation of monocytes and T cells. Such assays that may be used or routinely modified to test immunomodulatory and differentiation activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); Sathaporn and Eremin, J R Coll Surg Ednb 45(1):9-19 (2001); and Verhasselt et al., J Immunol 158:2919-2925 (1997), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.</p>

115	HNGIJ31	414	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p>
115	HNGIJ31	414	Activation of Skeletal Muscle Cell PI3 Kinase Signalling Pathway	<p>Kinase assay. Kinase assays, for example an GSK-3 kinase assay, for PI3 kinase signal transduction that regulate glucose metabolism and cell survival are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit glucose metabolism and cell survival. Exemplary assays for PI3 kinase activity that may be used or routinely modified to test PI3 kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Forrer et al., <i>Biol Chem</i> 379(8-9):1101-1110 (1998); Nikoulina et al., <i>Diabetes</i> 49(2):263-271 (2000); and Schreyer et al., <i>Diabetes</i> 48(8):1662-1666 (1999), the contents of each of which are herein incorporated by reference in its entirety. Rat myoblast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary rat myoblast cells that may be used according to these assays include L6 cells. L6 is an adherent rat myoblast cell line, isolated from primary cultures of rat thigh muscle, that fuses to form multinucleated myotubes and striated fibers after culture in differentiation media.</p>
116	HNGJES0	415	Production of IL-6	<p>IL-6 FMAT. IL-6 is produced by T cells and has strong effects on B cells. IL-6 participates in IL-4 induced IgE production and increases IgA production (IgA plays a role in mucosal immunity). IL-6 induces cytotoxic T cells. Deregulated expression of IL-6 has been linked to autoimmune disease, plasmacytomas, myelomas, and chronic hyperproliferative diseases. Assays for immunomodulatory and differentiation factor proteins produced by a large variety of cells where the expression level is strongly</p>

116	HNGJE50	415	Insulin Secretion	<p>regulated by cytokines, growth factors, and hormones are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation and differentiation and modulate T cell proliferation and function. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines, such as IL-6, and the stimulation and upregulation of T cell proliferation and functional activities. Such assays that may be used or routinely modified to test immunomodulatory and differentiation activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); and Verhasselt et al., J Immunol 158:2919-2925 (1997), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., Endocr J, 47(3):261-9 (2000); Salapatek, A.M., et al., Mol Endocrinol, 13(8):1305-17 (1999); Filipsson, K., et al., Ann N Y Acad Sci, 865:441-4 (1998); Olson, L.K., et al., J Biol Chem, 271(28):16544-52 (1996); and, Miraglia S et. al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p> <p>Assays for the regulation of transcription through the PEPCK promoter are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including</p>
117	HNGND37	416	Regulation of transcription	

118	HNGOI12	417	through the PEPCK promoter in hepatocytes	<p>antibodies and agonists or antagonists of the invention) to activate the PEPCK promoter in a reporter construct and regulate liver gluconeogenesis. Exemplary assays for regulation of transcription through the PEPCK promoter that may be used or routinely modified to test for PEPCK promoter activity (in hepatocytes) of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Lochhead et al., Diabetes 49(6):896-903 (2000); and Yeagley et al., J Biol Chem 275(23):17814-17820 (2000), the contents of each of which is herein incorporated by reference in its entirety. Hepatocyte cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary liver hepatoma cells that may be used according to these assays include H4Ile cells, which contain a tyrosine amino transferase that is inducible with glucocorticoids, insulin, or cAMP derivatives.</p> <p>Assays for measuring calcium flux are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mobilize calcium. For example, the FLPR assay may be used to measure influx of calcium. Cells normally have very low concentrations of cytosolic calcium compared to much higher extracellular calcium. Extracellular factors can cause an influx of calcium, leading to activation of calcium responsive signaling pathways and alterations in cell functions. Exemplary assays that may be used or routinely modified to measure calcium flux by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Satin LS, et al., Endocrinology, 136(10):4589-601 (1995); Mogami H, et al., Endocrinology, 136(7):2960-6 (1995); Richardson SB, et al., Biochem J, 288 (Pt 3):847-51 (1992); and, Meats, JE, et al., Cell Calcium 1989 Nov-Dec;10(8):535-41 (1989), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p>
118	HNGOI12	417	Production of IL-10 and activation of T-cells.	<p>Assays for production of IL-10 and activation of T-cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit production of IL-10 and/or activation of T-cells. Exemplary assays that may be used or routinely modified to assess the ability of polypeptides</p>

				<p>and antibodies of the invention (including agonists or antagonists of the invention) to modulate IL-10 production and/or T-cell proliferation include, for example, assays such as disclosed and/or cited in: Robinson, DS, et al., "Th-2 cytokines in allergic disease" <i>Br Med Bull</i>; 56 (4): 956-968 (2000), and Cohn, et al., "T-helper type 2 cell-directed therapy for asthma" <i>Pharmacology & Therapeutics</i>; 88: 187-196 (2000); the contents of each of which are herein incorporated by reference in their entirety. Exemplary cells that may be used according to these assays include Th2 cells. IL10 secreted from Th2 cells may be measured as a marker of Th2 cell activation. Th2 cells are a class of T cells that secrete IL4, IL10, IL13, IL5 and IL6. Factors that induce differentiation and activation of Th2 cells play a major role in the initiation and pathogenesis of allergy and asthma. Primary T helper 2 cells are generated via in vitro culture under Th2 polarizing conditions using peripheral blood lymphocytes isolated from cord blood.</p>
119	HNHU93	418	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992, 130:167.</p>
120	HNHFM14	419	Stimulation of Calcium Flux in pancreatic beta cells.	<p>Assays for measuring calcium flux are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mobilize calcium. For example, the FLPR assay may be used to measure influx of calcium. Cells normally have very low concentrations of cytosolic calcium compared to much higher extracellular calcium. Extracellular factors can cause an influx of calcium, leading to activation of calcium responsive signaling pathways and alterations in cell functions. Exemplary assays that may be used or routinely modified to measure calcium flux by polypeptides of the invention (including antibodies and agonists or</p>

121	HNHNB29	420	Regulation of transcription through the PEPCK promoter in hepatocytes	<p>antagonists of the invention) include assays disclosed in: Satin LS, et al., <i>Endocrinology</i>, 136(10):4589-601 (1995); Mogami H, et al., <i>Endocrinology</i>, 136(7):2960-6 (1995); Richardson SB, et al., <i>Biochem J</i>, 288 (Pt 3):847-51 (1992); and, Meats, JE, et al., <i>Cell Calcium</i> 1989 Nov-Dec;10(8):535-41 (1989), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATCC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J</i> 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p> <p>Assays for the regulation of transcription through the PEPCK promoter are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the PEPCK promoter in a reporter construct and regulate liver gluconeogenesis. Exemplary assays for regulation of transcription through the PEPCK promoter that may be used or routinely modified to test for PEPCK promoter activity (in hepatocytes) of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); Lochhead et al., <i>Diabetes</i> 49(6):896-903 (2000); and Yeagley et al., <i>J Biol Chem</i> 275(23):17814-17820 (2000), the contents of each of which is herein incorporated by reference in its entirety. Hepatocyte cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary liver hepatoma cells that may be used according to these assays include H4Ile cells, which contain a tyrosine amino transferase that is inducible with glucocorticoids, insulin, or cAMP derivatives.</p>
122	HNHOD46	421	Activation of Adipocyte ERK Signaling Pathway	<p>Kinase assay. Kinase assays, for example an Elk-1 kinase assay, for ERK signal transduction that regulate cell proliferation or differentiation are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit cell proliferation, activation, and differentiation. Exemplary assays for ERK kinase activity that may be used or routinely modified to test ERK kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Forrer et al., <i>Biol Chem</i> 379(8-9):1101-1110 (1998); Le Marchand-Brustel Y, <i>Exp Clin Endocrinol Diabetes</i> 107(2):126-132 (1999); Kyrriakis JM, <i>Biochem Soc Symp</i> 64:29-48 (1999); Chang and Karin, <i>Nature</i> 410(6824):37-40 (2001); and Cobb MH, <i>Prog Biophys</i></p>

122	HNHOD46	421	Regulation of transcription via DMEF1 response element in adipocytes and pre-adipocytes	<p>Mol Biol 71(3-4):479-500 (1999); the contents of each of which are herein incorporated by reference in its entirety. Mouse adipocyte cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.</p> <p>Assays for the regulation of transcription through the DMEF1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the DMEF1 response element in a reporter construct (such as that containing the GLUT4 promoter) and to regulate insulin production. The DMEF1 response element is present in the GLUT4 promoter and binds to MEF2 transcription factor and another transcription factor that is required for insulin regulation of Glut4 expression in skeletal muscle. GLUT4 is the primary insulin-responsive glucose transporter in fat and muscle tissue. Exemplary assays that may be used or routinely modified to test for DMEF1 response element activity (in adipocytes and pre-adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Thai, M. V., et al., J Biol Chem, 273(23):14285-92 (1998); Mora, S., et al., J Biol Chem, 275(21):16323-8 (2000); Liu, M.L., et al., J Biol Chem, 269(45):28514-21 (1994); "Identification of a 30-base pair regulatory element and novel DNA binding protein that regulates the human GLUT4 promoter in transgenic mice", J Biol Chem. 2000 Aug 4;275(31):23666-73; Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Adipocytes and pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include the mouse 3T3-L1 cell line which is an adherent mouse preadipocyte cell line. Mouse 3T3-L1 cells are a continuous substrain of 3T3 fibroblasts developed through clonal isolation. These cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p> <p>Assays for the activation of transcription through the cAMP response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to increase cAMP, regulate CREB transcription factors, and modulate expression of genes involved in a wide variety of cell functions. For example, a 3T3-L1/CRE reporter assay may be used to identify factors that activate the cAMP signaling pathway. CREB plays a major role in adipogenesis, and is involved in differentiation into adipocytes. CRE contains the binding sequence for the transcription factor CREB (CRE binding protein). Exemplary assays for transcription through the cAMP response element that may be used or routinely modified to</p>
122	HNHOD46	421	Activation of transcription through cAMP response element (CRE) in pre-adipocytes.	

122	HNHOD46	421	Activation of transcription through serum response element in pre-adipocytes.	<p>test cAMP-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Reusch et al., Mol Cell Biol 20(3):1008-1020 (2000); and Klemm et al., J Biol Chem 273:917-923 (1998), the contents of each of which are herein incorporated by reference in its entirety. Pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.</p> <p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate the serum response factors and modulate the expression of genes involved in growth. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. Pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.</p>
122	HNHOD46	421	Activation of transcription through cAMP response element in immune cells (such as T-cells).	<p>Assays for the activation of transcription through the cAMP response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to increase cAMP and regulate CREB transcription factors, and modulate expression of genes involved in a wide variety of cell functions. Exemplary assays for transcription through the cAMP response element that may be used or routinely modified to test cAMP-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Black et al., Virus Genes 15(2):105-117 (1997); and Belkowski et al., J Immunol 161(2):659-665 (1998), the contents of each of which are herein incorporated by reference in its</p>

122	HNHOD46	421	Activation of transcription through serum response element in immune cells (such as T-cells).	entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell line, which is a suspension culture of IL-2 dependent cytotoxic T cells. Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate the serum response factors and modulate the expression of genes involved in growth. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell line, which is an IL-2 dependent suspension culture of T cells with cytotoxic activity.
122	HNHOD46	421	Production of MIP1alpha	MIP-1alpha F/MAT. Assays for immunomodulatory proteins produced by activated dendritic cells that upregulate monocyte/macrophage and T cell chemotaxis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation, modulate chemotaxis, and modulate T cell differentiation. Exemplary assays that test for immunomodulatory proteins evaluate the production of chemokines, such as macrophage inflammatory protein 1 alpha (MIP-1a), and the activation of monocytes/macrophages and T cells. Such assays that may be used or routinely modified to test immunomodulatory and chemotaxis activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); Sathaporn and Eremin, J R Coll Surg Ednb 45(1):9-19 (2001); Drakes et al., Transp Immunol 8(1):17-29 (2000); Verhasselt et al., J Immunol 158:2919-2925 (1997); and Nardelli et al., J Leukoc Biol 65:822-828 (1999), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.
122	HNHOD46	421	Production of IL-6	IL-6 F/MAT. IL-6 is produced by T cells and has strong effects on B cells. IL-6 participates in IL-4 induced IgE production and increases IgA production (IgA plays a role in mucosal immunity). IL-6

122	HNHOD46	421	<p>induces cytotoxic T cells. Deregulated expression of IL-6 has been linked to autoimmune disease, plasmacytomas, myelomas, and chronic hyperproliferative diseases. Assays for immunomodulatory and differentiation factor proteins produced by a large variety of cells where the expression level is strongly regulated by cytokines, growth factors, and hormones are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation and differentiation and modulate T cell proliferation and function. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines, such as IL-6, and the stimulation and upregulation of T cell proliferation and functional activities. Such assays that may be used or routinely modified to test immunomodulatory and differentiation activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); and Verhasselt et al., J Immunol 158:2919-2925 (1997), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.</p> <p>This reporter assay measures activation of the GATA-3 signaling pathway in HMC-1 human mast cell line. Activation of GATA-3 in mast cells has been linked to cytokine and chemokine production. Assays for the activation of transcription through the GATA3 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate GATA3 transcription factors and modulate expression of mast cell genes important for immune response development. Exemplary assays for transcription through the GATA3 response element that may be used or routinely modified to test GATA3-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Flavell et al., Cold Spring Harb Symp Quant Biol 64:563-571 (1999); Rodriguez-Palmero et al., Eur J Immunol 29(12):3914-3924 (1999); Zheng and Flavell, Cell 89(4):587-596 (1997); and Henderson et al., Mol Cell Biol 14(6):4286-4294 (1994), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p>
			<p>Activation of transcription through GATA-3 response element in immune cells (such as mast cells).</p>

122	HNHOD46	421	Activation of transcription through NFAT response element in immune cells (such as mast cells).	<p>This reporter assay measures activation of the NFAT signaling pathway in HMC-1 human mast cell line. Activation of NFAT in mast cells has been linked to cytokine and chemokine production. Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions. Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); De Boer et al., Int J Biochem Cell Biol 31(10):1221-1236 (1999); Ali et al., J Immunol 165(12):7215-7223 (2000); Hutchinson and McCloskey, J Biol Chem 270(27):16333-16338 (1995), and Turner et al., J Exp Med 188:527-537 (1998), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p>
122	HNHOD46	421	Activation of transcription through cAMP response element in immune cells (such as T-cells).	<p>Assays for the activation of transcription through the cAMP response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to increase cAMP, bind to CREB transcription factor, and modulate expression of genes involved in a wide variety of cell functions. Exemplary assays for transcription through the cAMP response element that may be used or routinely modified to test cAMP-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Black et al., Virus Genes 15(2):105-117 (1997); and Belkowsky et al., J Immunol 161(2):659-665 (1998), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the JURKAT cell line, which is a suspension culture of leukemia cells that produce IL-2 when stimulated.</p>
122	HNHOD46	421	Activation of transcription through NFAT	<p>Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to</p>

122	HNHOD46	421	<p>response in immune cells (such as T-cells).</p> <p>regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions. Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); Serfling et al., <i>Biochim Biophys Acta</i> 1498(1):1-18 (2000); De Boer et al., <i>Int J Biochem Cell Biol</i> 31(10):1221-1236 (1999); Fraser et al., <i>Eur J Immunol</i> 29(3):838-844 (1999); and Yeseen et al., <i>J Biol Chem</i> 268(19):14285-14293 (1993), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the JURKAT cell line, which is a suspension culture of leukemia cells that produce IL-2 when stimulated.</p>
122	HNHOD46	421	<p>Activation of transcription through NFkB response element in immune cells (such as basophils).</p> <p>This reporter assay measures activation of the NFkB signaling pathway in Ku812 human basophil cell line. Assays for the activation of transcription through the NFkB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFkB transcription factors and modulate expression of immunomodulatory genes. Exemplary assays for transcription through the NFkB response element that may be used or routinely modified to test NFkB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); Marone et al., <i>Int Arch Allergy Immunol</i> 114(3):207-17 (1997), the contents of each of which are herein incorporated by reference in its entirety. Basophils that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human basophil cell lines that may be used according to these assays include Ku812, originally established from a patient with chronic myelogenous leukemia. It is an immature prebasophilic cell line that can be induced to differentiate into mature basophils.</p>
122	HNHOD46	421	<p>Activation of transcription through GAS response element in immune cells (such as T-cells).</p> <p>Assays for the activation of transcription through the Gamma Interferon Activation Site (GAS) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate STAT transcription factors and modulate gene expression involved in a wide variety of cell functions. Exemplary assays for transcription through the GAS response element that may be used or routinely modified to test GAS-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl</i></p>

122	HNHOD46	421	<p>Acad Sci USA 85:6342-6346 (1988); Matikainen et al., Blood 93(6):1980-1991 (1999); and Hentinen et al., J Immunol 155(10):4582-4587 (1995), the contents of each of which are herein incorporated by reference in its entirety. Exemplary human T cells, such as the MOLT4 cell line, that may be used according to these assays are publicly available (e.g., through the ATCC).</p> <p>Assays for the activation of transcription through the NFKB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFKB transcription factors and modulate expression of immunomodulatory genes. Exemplary assays for transcription through the NFKB response element that may be used or routinely modified to test NFKB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Black et al., Virus Gnes 15(2):105-117 (1997); and Fraser et al., 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. Exemplary human T cells, such as the MOLT4, that may be used according to these assays are publicly available (e.g., through the ATCC).</p> <p>Assays for the activation of transcription through the NFKB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFKB transcription factors and modulate expression of immunomodulatory genes. Exemplary assays for transcription through the NFKB response element that may be used or routinely modified to test NFKB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Valle Blazquez et al., Immunology 90(3):455-460 (1997); Aramburu et al., J Exp Med 82(3):801-810 (1995); and Fraser et al., 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. NK cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary NK cells that may be used according to these assays include the NK-YT cell line, which is a human natural killer cell line with cytolytic and cytotoxic activity.</p> <p>Assays for the activation of transcription through the AP1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to modulate growth and other cell functions. Exemplary assays for transcription through the AP1 response element that may be used or routinely modified to test AP1-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1988);</p>
122	HNHOD46	421	<p>Activation of transcription through NFKB response element in immune cells (such as T-cells).</p> <p>Activation of transcription through NFKB response element in immune cells (such as natural killer cells).</p>
122	HNHOD46	421	<p>Activation of transcription through AP1 response element in immune cells</p>

122	HNHOD46	421	(such as T-cells).	<p>Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Rellahan et al., J Biol Chem 272(49):30806-30811 (1997); Chang et al., Mol Cell Biol 18(9):4986-4993 (1998); and Fraser et al., Eur J Immunol 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. Human T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the SUPT cell line, which is an IL-2 and IL-4 responsive suspension-culture cell line.</p> <p>Assays for the activation of transcription through the CD28 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate IL-2 expression in T cells. Exemplary assays for transcription through the CD28 response element that may be used or routinely modified to test CD28-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); McGuire and Iacobelli, J Immunol 159(3):1319-1327 (1997); Parra et al., J Immunol 166(4):2437-2443 (2001); and Butscher et al., J Biol Chem 273(1):552-560 (1998), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the SUPT cell line, which is a suspension culture of IL-2 and IL-4 responsive T cells.</p>
122	HNHOD46	421	Activation of transcription through CD28 response element in immune cells (such as T-cells).	<p>Assays for the activation of transcription through the Gamma Interferon Activation Site (GAS) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate STAT transcription factors and modulate gene expression involved in a wide variety of cell functions. Exemplary assays for transcription through the GAS response element that may be used or routinely modified to test GAS-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Matikainen et al., Blood 93(6):1980-1991 (1999); and Henthorn et al., J Immunol 155(10):4582-4587 (1995), the contents of each of which are herein incorporated by reference in its entirety. Exemplary human T cells, such as the SUPT cell line, that may be used according to these assays are publicly available (e.g., through the ATCC).</p>
122	HNHOD46	421	Activation of transcription	<p>Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of</p>

122	HNHOD46	421	through NFAT response element in immune cells (such as T-cells).	<p>polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions. Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Serfling et al., Biochim Biophys Acta 1498(1):1-18 (2000); De Boer et al., Int J Biochem Cell Biol 31(10):1221-1236 (1999); Fraser et al., Eur J Immunol 29(3):838-844 (1999); and Yeseen et al., J Biol Chem 268(19):14285-14293 (1993), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the SUPT cell line, which is a suspension culture of IL-2 and IL-4 responsive T cells.</p>
122	HNHOD46	421	Activation of transcription through STAT6 response element in immune cells (such as T-cells).	<p>Assays for the activation of transcription through the Signal Transducers and Activators of Transcription (STAT6) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate STAT6 transcription factors and modulate the expression of multiple genes. Exemplary assays for transcription through the STAT6 response element that may be used or routinely modified to test STAT6 response element activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Georas et al., Blood 92(12):4529-4538 (1998); Moffatt et al., Transplantation 69(7):1521-1523 (2000); Curiel et al., Eur J Immunol 27(8):1982-1987 (1997); and Masuda et al., J Biol Chem 275(38):29331-29337 (2000), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary T cells that may be used according to these assays include the SUPT cell line, which is a suspension culture of IL-2 and IL-4 responsive T cells.</p>
122	HNHOD46	421	Activation of transcription through NFkB response element in immune cells (such as T-cells).	<p>Assays for the activation of transcription through the NFkB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFkB transcription factors and modulate expression of immunomodulatory genes. Exemplary assays for transcription through the NFkB response element that may be used or routinely modified to test NFkB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol</p>

122	HNHOD46	421	cells). Activation of transcription through serum response element in immune cells (such as natural killer cells).	<p>216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Black et al., Virus Gnes 15(2):105-117 (1997); and Fraser et al., 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the SUPT cell line, which is a suspension culture of IL-2 and IL-4 responsive T cells.</p> <p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate serum response factors and modulate the expression of genes involved in growth and upregulate the function of growth-related genes in many cell types. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Benson et al., J Immunol 153(9):3862-3873 (1994); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary T cells that may be used according to these assays include the NK-YT cell line, which is a human natural killer cell line with cytolytic and cytotoxic activity.</p>
123	HNTBI26	422	Regulation of apoptosis in pancreatic beta cells.	<p>Caspase Apoptosis. Assays for caspase apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote caspase protease-mediated apoptosis. Apoptosis in pancreatic beta is associated with induction and progression of diabetes. Exemplary assays for caspase apoptosis that may be used or routinely modified to test caspase apoptosis activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in: Loweth, AC, et al., FEBS Lett, 400(3):285-8 (1997); Saini, KS, et al., Biochem Mol Biol Int, 39(6):1229-36 (1996); Krauthelm, A., et al., Br J Pharmacol, 129(4):687-94 (2000); Chandra J, et al., Diabetes, 50 Suppl 1:S44-7 (2001); Suk K, et al., J Immunol, 166(7):4481-9 (2001); Tejedo J, et al., FEBS Lett, 459(2):238-43 (1999); Zhang, S., et al., FEBS Lett, 455(3):315-20 (1999); Lee et al., FEBS Lett 485(2-3): 122-126 (2000); Nor et al., J Vasc Res 37(3): 209-218 (2000); and Karsan and Harlan, J Atheroscler Thromb 3(2): 75-80 (1996); the contents of each of which are herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include RIN-m. RIN-m is a rat adherent pancreatic beta cell</p>

124	HNTBL27	423	Regulation of apoptosis in pancreatic beta cells.	<p>insulinoma cell line derived from a radiation induced transplantable rat islet cell tumor. The cells produce and secrete islet polypeptide hormones, and produce insulin, somatostatin, and possibly glucagon. ATTC: #CRL-2057 Chick et al. Proc. Natl. Acad. Sci. 1977 74:628; AF et al. Proc. Natl. Acad. Sci. 1980 77:3519.</p> <p>Caspase Apoptosis. Assays for caspase apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote caspase protease-mediated apoptosis. Apoptosis in pancreatic beta is associated with induction and progression of diabetes. Exemplary assays for caspase apoptosis that may be used or routinely modified to test caspase apoptosis activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in: Loweth, AC, et al., FEBS Lett, 400(3):285-8 (1997); Saini, KS, et al., Biochem Mol Biol Int, 39(6):1229-36 (1996); Krauthelm, A., et al., Br J Pharmacol, 129(4):687-94 (2000); Chandra J, et al., Diabetes, 50 Suppl 1:S44-7 (2001); Suk K, et al., J Immunol, 166(7):4481-9 (2001); Tejedo J, et al., FEBS Lett, 459(2):238-43 (1999); Zhang, S., et al., FEBS Lett, 455(3):315-20 (1999); Lee et al., FEBS Lett 485(2-3): 122-126 (2000); Nor et al., J Vasc Res 37(3): 209-218 (2000); and Karsan and Harlan, J Atheroscler Thromb 3(2): 75-80 (1996); the contents of each of which are herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include RIN-m. RIN-m is a rat adherent pancreatic beta cell insulinoma cell line derived from a radiation induced transplantable rat islet cell tumor. The cells produce and secrete islet polypeptide hormones, and produce insulin, somatostatin, and possibly glucagon. ATTC: #CRL-2057 Chick et al. Proc. Natl. Acad. Sci. 1977 74:628; AF et al. Proc. Natl. Acad. Sci. 1980 77:3519.</p>
124	HNTBL27	423	Production of IL-10 and activation of T-cells.	<p>Assays for production of IL-10 and activation of T-cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit production of IL-10 and/or activation of T-cells. Exemplary assays that may be used or routinely modified to assess the ability of polypeptides and antibodies of the invention (including agonists or antagonists of the invention) to modulate IL-10 production and/or T-cell proliferation include, for example, assays such as disclosed and/or cited in: Robinson, DS, et al., "Th-2 cytokines in allergic disease" Br Med Bull; 56 (4): 956-968 (2000), and Cohn, et al., "T-helper type 2 cell-directed therapy for asthma" Pharmacology & Therapeutics; 88: 187-196 (2000); the contents of each of which are herein incorporated by reference in their entirety. Exemplary cells that may be used according to these assays include Th2 cells. IL10 secreted from Th2 cells may be measured as a marker of Th2 cell activation. Th2 cells are a class of T cells that secrete</p>

125	HNTCE26	424	Production of TNF alpha by dendritic cells	<p>IL4, IL10, IL13, IL5 and IL6. Factors that induce differentiation and activation of Th2 cells play a major role in the initiation and pathogenesis of allergy and asthma. Primary T helper 2 cells are generated via in vitro culture under Th2 polarizing conditions using peripheral blood lymphocytes isolated from cord blood.</p> <p>TNFα FMTAT. Assays for immunomodulatory proteins produced by activated macrophages, T cells, fibroblasts, smooth muscle, and other cell types that exert a wide variety of inflammatory and cytotoxic effects on a variety of cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation, modulate inflammation and cytotoxicity. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines such as tumor necrosis factor alpha (TNFα), and the induction or inhibition of an inflammatory or cytotoxic response. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); Verhasselt et al., Eur J Immunol 28(11):3886-3890 (1998); Dahlen et al., J Immunol 160(7):3585-3593 (1998); Verhasselt et al., J Immunol 158:2919-2925 (1997); and Nardelli et al., J Leukoc Biol 65:822-828 (1999), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.</p>
125	HNTCE26	424	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMTAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes.</p> <p>Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li, M., et al., Endocrinology, 138(9):3735-40 (1997); Kim, K.H., et al., FEBS Lett, 377(2):237-9 (1995); and, Miraglia S et al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated.</p> <p>Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1</p>

125	HNTCE26	424	Production of ICAM-1	<p>cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>Assays for measuring expression of ICAM-1 are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate ICAM-1 expression. Exemplary assays that may be used or routinely modified to measure ICAM-1 expression include assays disclosed in: Takacs P, et al. <i>FASEB J</i>, 15(2):279-281 (2001); and, Miyamoto K, et al., <i>Am J Pathol</i>, 156(5):1733-1739 (2000), the contents of each of which is herein incorporated by reference in its entirety. Cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include microvascular endothelial cells (MVEC).</p>
125	HNTCE26	424	Upregulation of CD69 and activation of T cells	<p>CD69 FMAT. CD69 is an activation marker that is expressed on activated T cells, B cells, and NK cells. CD69 is not expressed on resting T cells, B cells, or NK cells. CD69 has been found to be associated with inflammation. Assays for immunomodulatory proteins expressed in T cells, B cells, and leukocytes are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to modulate the activation of T cells, and/or mediate humoral or cell-mediated immunity. Exemplary assays that test for immunomodulatory proteins evaluate the upregulation of cell surface markers, such as CD69, and the activation of T cells. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include, for example, the assays disclosed in Miraglia et al., <i>J Biomolecular Screening</i> 4:193-204 (1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); Ferenczi et al., <i>J Autoimmun</i> 14(1):63-78 (2001); Werfel et al., <i>Allergy</i> 52(4):465-469 (1997); Taylor-Fishwick and Siegel, <i>Eur J Immunol</i> 25(12):3215-3221 (1995); and Afetra et al., <i>Ann Rheum Dis</i> 52(6):457-460 (1993), the contents of each of which are herein incorporated by reference in its entirety. Human T cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human T cells are primary human lymphocytes that mature in the thymus and express a T Cell receptor and CD3, CD4, or CD8. These cells mediate humoral or cell-mediated immunity and may be preactivated to enhance responsiveness to immunomodulatory factors.</p>
126	HNTNI01	425	Regulation of transcription via DMEF1 response	<p>Assays for the regulation of transcription through the DMEF1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the DMEF1 response element in a reporter construct (such as that containing the GLUT4 promoter) and to regulate insulin production. The</p>

126	HNTN101	425	element in adipocytes and pre-adipocytes	<p>DMEF1 response element is present in the GLUT4 promoter and binds to MEF2 transcription factor and another transcription factor that is required for insulin regulation of Glut4 expression in skeletal muscle. GLUT4 is the primary insulin-responsive glucose transporter in fat and muscle tissue. Exemplary assays that may be used or routinely modified to test for DMEF1 response element activity (in adipocytes and pre-adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Thai, M.V., et al., J Biol Chem, 273(23):14285-92 (1998); Mora, S., et al., J Biol Chem, 275(21):16323-8 (2000); Liu, M.L., et al., J Biol Chem, 269(45):28514-21 (1994); "Identification of a 30-base pair regulatory element and novel DNA binding protein that regulates the human GLUT4 promoter in transgenic mice", J Biol Chem. 2000 Aug 4;275(31):23666-73; Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Adipocytes and pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include the mouse 3T3-L1 cell line which is an adherent mouse preadipocyte cell line. Mouse 3T3-L1 cells are a continuous substrain of 3T3 fibroblasts developed through clonal isolation. These cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p>
			Activation of transcription through cAMP response element (CRE) in pre-adipocytes.	<p>Assays for the activation of transcription through the cAMP response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to increase cAMP, regulate CREB transcription factors, and modulate expression of genes involved in a wide variety of cell functions. For example, a 3T3-L1/CRE reporter assay may be used to identify factors that activate the cAMP signaling pathway. CREB plays a major role in adipogenesis, and is involved in differentiation into adipocytes. CRE contains the binding sequence for the transcription factor CREB (CRE binding protein). Exemplary assays for transcription through the cAMP response element that may be used or routinely modified to test cAMP-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Reusch et al., Mol Cell Biol 20(3):1008-1020 (2000); and Klemm et al., J Biol Chem 273:917-923 (1998), the contents of each of which are herein incorporated by reference in its entirety. Pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.</p>

126	HNTNI01	425	Activation of transcription through serum response element in pre-adipocytes.	<p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate the serum response factors and modulate the expression of genes involved in growth. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. Pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.</p>
126	HNTNI01	425	Activation of transcription through response element in immune cells (such as eosinophils).	<p>Assays for the activation of transcription through the Gamma Interferon Activation Site (GAS) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to modulate gene expression (commonly via STAT transcription factors) involved in a wide variety of cell functions. Exemplary assays for transcription through the GAS response element that may be used or routinely modified to test GAS-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Matikainen et al., Blood 93(6):1980-1991 (1999); and Hentinen et al., J Immunol 155(10):4582-4587 (1995); the contents of each of which are herein incorporated by reference in its entirety. Moreover, exemplary assays that may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate or inhibit activation of immune cells include assays disclosed and/or cited in: Mayumi M., "EoL-1, a human eosinophilic cell line" Leuk Lymphoma; Jun;7(3):243-50 (1992); Bhattacharya S., "Granulocyte macrophage colony-stimulating factor and interleukin-5 activate STAT5 and induce CIS1 mRNA in human peripheral blood eosinophils" Am J Respir Cell Mol Biol; Mar;24(3):312-6 (2001); and, Du J, et al., "Engagement of the CrkL adapter in interleukin-5 signaling in eosinophils" J Biol Chem; Oct 20;275(42):33167-75 (2000); the contents of each of which are herein incorporated by reference in its entirety. Exemplary cells that may be used according to these assays include eosinophils. Eosinophils are a type of immune cell important in the late stage of allergic</p>

126	HNTN01	425	Activation of transcription through NFKB response element in immune cells (such as EOL1 cells).	<p>reactions; they are recruited to tissues and mediate the inflammatory response of late stage allergic reaction. Increases in GAS mediated transcription in eosinophils is typically a result of STAT activation, normally a direct consequence of interleukin or other cytokine receptor stimulation (e.g. IL3, IL5 or GM-CSF).</p> <p>Assays for the activation of transcription through the NFKB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFKB transcription factors and modulate expression of immunomodulatory genes. Exemplary assays for transcription through the NFKB response element that may be used or routinely modified to test NFKB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Valle Blazquez et al., Immunology 90(3):455-460 (1997); Aramburau et al., J Exp Med 82(3):801-810 (1995); and Fraser et al., 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. For example, a reporter assay (which measures increases in transcription inducible from a NFKB responsive element in EOL-1 cells) may link the NFKB element to a reporter gene and binds to the NFKB transcription factor, which is upregulated by cytokines and other factors. Exemplary immune cells that may be used according to these assays include eosinophils such as the human EOL-1 cell line of eosinophils. Eosinophils are a type of immune cell important in the allergic responses; they are recruited to tissues and mediate the inflammatory response of late stage allergic reaction. Eol-1 is a human eosinophil cell line.</p>
126	HNTN01	425	Regulation of transcription of Malic Enzyme in adipocytes	<p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and MEed identified as putative PPAR response elements. ME promoter may also respond to API and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeter, R.S., et al., Mol Endocrinol, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., Mol Endocrinol, 8(10):1361-9 (1994); Barroso, I., et al., J Biol Chem, 274(25):17997-8004 (1999); Jipenberg, A., et al., J Biol Chem, 272(32):20108-20117 (1997); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used</p>

126	HNTNI01	425	Activation of transcription through GATA-3 response element in immune cells (such as mast cells).	<p>according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays includes the H4IIE rat liver hepatoma cell line.</p> <p>This reporter assay measures activation of the GATA-3 signaling pathway in HMC-1 human mast cell line. Activation of GATA-3 in mast cells has been linked to cytokine and chemokine production. Assays for the activation of transcription through the GATA3 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate GATA3 transcription factors and modulate expression of mast cell genes important for immune response development. Exemplary assays for transcription through the GATA3 response element that may be used or routinely modified to test GATA3-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Flavell et al., Cold Spring Harb Symp Quant Biol 64:563-571 (1999); Rodriguez-Palmero et al., Eur J Immunol 29(12):3914-3924 (1999); Zheng and Flavell, Cell 89(4):587-596 (1997); and Henderson et al., Mol Cell Biol 14(6):4286-4294 (1994), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p>
126	HNTNI01	425	Activation of transcription through NFAT response element in immune cells (such as mast cells).	<p>This reporter assay measures activation of the NFAT signaling pathway in HMC-1 human mast cell line. Activation of NFAT in mast cells has been linked to cytokine and chemokine production. Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions. Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); De Boer et al., Int J Biochem Cell Biol 31(10):1221-1236 (1999); Ali et al., J Immunol 165(12):7215-7223 (2000); Hutchinson and McCloskey, J Biol Chem 270(27):16333-16338 (1995), and Turner et al., J Exp Med 188:527-537 (1998), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are</p>

126	HNTN01	425	Activation of transcription through NFkB response element in immune cells (such as mast cells).	<p>publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p> <p>This reporter assay measures activation of the NFkB signaling pathway in HMC-1 human mast cell line. Activation of NFkB in mast cells has been linked to production of certain cytokines, such as IL-6 and IL-9. Assays for the activation of transcription through the NFkB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFkB transcription factors and modulate expression of immunomodulatory genes. Exemplary assays for transcription through the NFkB response element that may be used or routinely modified to test NFkB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Stassen et al., J Immunol 166(7):4391-8 (2001); and Marquardt and Walker, J Allergy Clin Immunol 105(3):500-5 (2000), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p>
126	HNTN01	425	Activation of transcription through STAT6 response element in immune cells (such as mast cells).	<p>Assays for the activation of transcription through the Signal Transducers and Activators of Transcription (STAT6) response element in immune cells (such as in the human HMC-1 mast cell line) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate STAT6 transcription factors and modulate the expression of multiple genes. Exemplary assays for transcription through the STAT6 response element that may be used or routinely modified to test STAT6 response element activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Sherman, Immunol Rev 179:48-56 (2001); Malaviya and Uckun, J Immunol 168:421-426 (2002); Masuda et al., J Biol Chem 275(38):29331-29337 (2000); and Masuda et al., J Biol Chem 276:26107-26113 (2001), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line</p>

126	HNTNI01	425	Activation of transcription through NFkB response element in immune cells (such as basophils).	<p>established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p> <p>This reporter assay measures activation of the NFkB signaling pathway in Ku812 human basophil cell line. Assays for the activation of transcription through the NFkB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFkB transcription factors and modulate expression of immunomodulatory genes. Exemplary assays for transcription through the NFkB response element that may be used or routinely modified to test NFkB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Marone et al, Int Arch Allergy Immunol 114(3):207-17 (1997), the contents of each of which are herein incorporated by reference in its entirety. Basophils that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human basophil cell lines that may be used according to these assays include Ku812, originally established from a patient with chronic myelogenous leukemia. It is an immature prebasophilic cell line that can be induced to differentiate into mature basophils.</p> <p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to bind the serum response factor and modulate the expression of genes involved in growth and upregulate the function of growth-related genes in many cell types. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Benson et al., J Immunol 153(9):3862-3873 (1994); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells, such as the MOL.T4, that may be used according to these assays are publicly available (e.g., through the ATCC).</p> <p>Assays for the activation of transcription through the Signal Transducers and Activators of Transcription (STAT6) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate STAT6 transcription factors and modulate the expression of multiple genes. Exemplary assays for transcription through the STAT6 response element that may be used or routinely modified to</p>
126	HNTNI01	425	Activation of transcription through serum response element in immune cells (such as T-cells).	
126	HNTNI01	425	Activation of transcription through STAT6 response element in	

126	HNTNI01	425	immune cells (such as natural killer cells).	<p>test STAT6 response element activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Georas et al., Blood 92(12):4529-4538 (1998); Moffatt et al., Transplantation 69(7):1521-1523 (2000); Curriel et al., Eur J Immunol 27(8):1982-1987 (1997); and Masuda et al., J Biol Chem 275(38):29331-29337 (2000), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary rat natural killer cells that may be used according to these assays are publicly available (e.g., through the ATCC).</p> <p>Assays for the activation of transcription through the Gamma Interferon Activation Site (GAS) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate STAT transcription factors and modulate gene expression involved in a wide variety of cell functions. Exemplary assays for transcription through the GAS response element that may be used or routinely modified to test GAS-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Matikainen et al., Blood 93(6):1980-1991 (1999); and Hentinen et al., J Immunol 155(10):4582-4587 (1995), the contents of each of which are herein incorporated by reference in its entirety. Exemplary human T cells, such as the SUPT cell line, that may be used according to these assays are publicly available (e.g., through the ATCC).</p> <p>Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions. Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Aramburu et al., J Exp Med 182(3):801-810 (1995); De Boer et al., Int J Biochem Cell Biol 31(10):1221-1236 (1999); Fraser et al., Eur J Immunol 29(3):838-844 (1999); and Yeseen et al., J Biol Chem 268(19):14285-14293 (1993), the contents of each of which are herein incorporated by reference in its entirety. NK cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human NK cells that may be used according to</p>
126	HNTNI01	425	Activation of transcription through GAS response element in immune cells (such as T- cells).	<p>Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions. Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Aramburu et al., J Exp Med 182(3):801-810 (1995); De Boer et al., Int J Biochem Cell Biol 31(10):1221-1236 (1999); Fraser et al., Eur J Immunol 29(3):838-844 (1999); and Yeseen et al., J Biol Chem 268(19):14285-14293 (1993), the contents of each of which are herein incorporated by reference in its entirety. NK cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human NK cells that may be used according to</p>

127	HODDF13	426	Regulation of transcription through the FAS promoter element in hepatocytes	<p>these assays include the NK-YT cell line, which is a human natural killer cell line with cytolytic and cytotoxic activity.</p> <p>Assays for the regulation of transcription through the FAS promoter element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the FAS promoter element in a reporter construct and to regulate transcription of FAS, a key enzyme for lipogenesis. FAS promoter is regulated by many transcription factors including SREBP. Insulin increases FAS gene transcription in livers of diabetic mice. This stimulation of transcription is also somewhat glucose dependent. Exemplary assays that may be used or routinely modified to test for FAS promoter element activity (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Xiong, S., et al., <i>Proc Natl Acad Sci U.S.A.</i>, 97(8):3948-53 (2000); Roder, K., et al., <i>Eur J Biochem</i>, 260(3):743-51 (1999); Oskouian B, et al., <i>Biochem J</i>, 317 (Pt 1):257-65 (1996); Berger, et al., <i>Gene</i> 66:1-10 (1988); and, Cullen, B., et al., <i>Methods in Enzymol.</i> 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays, such as H4IIE cells, are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays include rat liver hepatoma cell line(s) inducible with glucocorticoids, insulin, or cAMP derivatives.</p>
127	HODDF13	426	Activation of transcription through GATA-3 response element in immune cells (such as mast cells).	<p>This reporter assay measures activation of the GATA-3 signaling pathway in HMC-1 human mast cell line. Activation of GATA-3 in mast cells has been linked to cytokine and chemokine production. Assays for the activation of transcription through the GATA3 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate GATA3 transcription factors and modulate expression of mast cell genes important for immune response development. Exemplary assays for transcription through the GATA3 response element that may be used or routinely modified to test GATA3-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); Flavell et al., <i>Cold Spring Harb Symp Quant Biol</i> 64:563-571 (1999); Rodriguez-Palmero et al., <i>Eur J Immunol</i> 29(12):3914-3924 (1999); Zheng and Flavell, <i>Cell</i> 89(4):587-596 (1997); and Henderson et al., <i>Mol Cell Biol</i> 14(6):4286-4294 (1994), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral</p>

127	HODDF13	426	Activation of transcription through NFAT response element in immune cells (such as mast cells).	<p>blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p> <p>This reporter assay measures activation of the NFAT signaling pathway in HMC-1 human mast cell line. Activation of NFAT in mast cells has been linked to cytokine and chemokine production. Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions. Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); De Boer et al., Int J Biochem Cell Biol 31(10):1221-1236 (1999); Ali et al., J Immunol 165(12):7215-7223 (2000); Hutchinson and McCloskey, J Biol Chem 270(27):16333-16338 (1995), and Turner et al., J Exp Med 188:527-537 (1998), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p>
128	HODDN92	427	Production of MIP1alpha	<p>MIP-1alpha F/MAT. Assays for immunomodulatory proteins produced by activated dendritic cells that upregulate monocyte/macrophage and T cell chemotaxis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation, modulate chemotaxis, and modulate T cell differentiation. Exemplary assays that test for immunomodulatory proteins evaluate the production of chemokines, such as macrophage inflammatory protein 1 alpha (MIP-1a), and the activation of monocytes/macrophages and T cells. Such assays that may be used or routinely modified to test immunomodulatory and chemotaxis activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); Sathaporn and Erenin, J R Coll Surg Ednb 45(1):9-19 (2001); Drakes et al., Transp Immunol 8(1):17-29 (2000); Verhasselt et al., J Immunol 158:2919-2925 (1997); and Nardelli et al., J Leukoc Biol 65:822-828 (1999), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in</p>

128	HODDN92	427	Production of MCP-1	<p>suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.</p> <p>MCP-1 F/MAT. Assays for immunomodulatory proteins that are produced by a large variety of cells and act to induce chemotaxis and activation of monocytes and T cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation, induce chemotaxis, and modulate immune cell activation. Exemplary assays that test for immunomodulatory proteins evaluate the production of cell surface markers, such as monocyte chemoattractant protein (MCP), and the activation of monocytes and T cells. Such assays that may be used or routinely modified to test immunomodulatory and differentiation activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); Sathaporn and Eremin, J R Coll Surg Ednb 45(1):9-19 (2001); and Verhasselt et al., J Immunol 158:2919-2925 (1997), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.</p>
128	HODDN92	427	Production of IL-6	<p>IL-6 F/MAT. IL-6 is produced by T cells and has strong effects on B cells. IL-6 participates in IL-4 induced IgE production and increases IgA production (IgA plays a role in mucosal immunity). IL-6 induces cytotoxic T cells. Deregulated expression of IL-6 has been linked to autoimmune disease, plasmacytomas, myelomas, and chronic hyperproliferative diseases. Assays for immunomodulatory and differentiation factor proteins produced by a large variety of cells where the expression level is strongly regulated by cytokines, growth factors, and hormones are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation and differentiation and modulate T cell proliferation and function. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines, such as IL-6, and the stimulation and upregulation of T cell proliferation and functional activities. Such assays that may be used or routinely modified to test immunomodulatory and differentiation activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); and Verhasselt et al., J Immunol 158:2919-2925 (1997), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using</p>

128	HODDN92	427	Regulation of transcription through the FAS promoter element in hepatocytes	<p>techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.</p> <p>Assays for the regulation of transcription through the FAS promoter element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the FAS promoter element in a reporter construct and to regulate transcription of FAS, a key enzyme for lipogenesis. FAS promoter is regulated by many transcription factors including SREBP. Insulin increases FAS gene transcription in livers of diabetic mice. This stimulation of transcription is also somewhat glucose dependent.</p> <p>Exemplary assays that may be used or routinely modified to test for FAS promoter element activity (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Xiong, S., et al., <i>Proc Natl Acad Sci U.S.A.</i>, 97(8):3948-53 (2000); Roder, K., et al., <i>Eur J Biochem</i>, 260(3):743-51 (1999); Oskouian B, et al., <i>Biochem J</i>, 317 (Pt 1):257-65 (1996); Berger, et al., <i>Gene</i> 66:1-10 (1988); and, Cullen, B., et al., <i>Methods in Enzymol.</i> 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays, such as H4IIE cells, are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays include rat liver hepatoma cell line(s) inducible with glucocorticoids, insulin, or cAMP derivatives.</p>
128	HODDN92	427	Activation of transcription through GATA-3 response element in immune cells (such as mast cells).	<p>This reporter assay measures activation of the GATA-3 signaling pathway in HMC-1 human mast cell line. Activation of GATA-3 in mast cells has been linked to cytokine and chemokine production. Assays for the activation of transcription through the GATA3 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate GATA3 transcription factors and modulate expression of mast cell genes important for immune response development. Exemplary assays for transcription through the GATA3 response element that may be used or routinely modified to test GATA3-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); Flavell et al., <i>Cold Spring Harb Symp Quant Biol</i> 64:563-571 (1999); Rodriguez-Palmero et al., <i>Eur J Immunol</i> 29(12):3914-3924 (1999); Zheng and Flavell, <i>Cell</i> 89(4):587-596 (1997); and Henderson et al., <i>Mol Cell Biol</i> 14(6):4286-4294 (1994), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays</p>

128	HODDN92	427	Activation of transcription through NFAT response element in immune cells (such as mast cells).	<p>include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p> <p>This reporter assay measures activation of the NFAT signaling pathway in HMC-1 human mast cell line. Activation of NFAT in mast cells has been linked to cytokine and chemokine production. Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions.</p> <p>Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); De Boer et al., Int J Biochem Cell Biol 31(10):1221-1236 (1999); Ali et al., J Immunol 165(12):7215-7223 (2000); Hutchinson and McCloskey, J Biol Chem 270(27):16333-16338 (1995), and Turner et al., J Exp Med 188:527-537 (1998), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p>
128	HODDN92	427	Activation of Endothelial Cell p38 or JNK Signaling Pathway.	<p>Kinase assay. JNK and p38 kinase assays for signal transduction that regulate cell proliferation, activation, or apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit cell proliferation, activation, and apoptosis. Exemplary assays for JNK and p38 kinase activity that may be used or routinely modified to test JNK and p38 kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Forrer et al., Biol Chem 379(8-9):1101-1110 (1998); Gupta et al., Exp Cell Res 247(2): 495-504 (1999); Kyriakis JM, Biochem Soc Symp 64:29-48 (1999); Chang and Karin, Nature 410(6824):37-40 (2001); and Cobb MH, Prog Biophys Mol Biol 71(3-4):479-500 (1999); the contents of each of which are herein incorporated by reference in its entirety. Endothelial cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary endothelial cells that may be used according to these assays include human umbilical vein endothelial cells (HUVEC), which are endothelial cells which line venous blood vessels, and are involved in functions that include, but are not limited to, angiogenesis, vascular permeability, vascular tone, and immune cell extravasation.</p>

129	HOFMQ33	428	Regulation of viability and proliferation of pancreatic beta cells.	<p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ohtani KI, et al., <i>Endocrinology</i>, 139(1):172-8 (1998); Krauthaim A, et al, <i>Exp Clin Endocrinol Diabetes</i>, 107 (1):29-34 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATCC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J.</i> 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p>
129	HOFMQ33	428	Activation of transcription through serum response element in immune cells (such as T-cells).	<p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to bind the serum response factor and modulate the expression of genes involved in growth and upregulate the function of growth-related genes in many cell types. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); Benson et al., <i>J Immunol</i> 153(9):3862-3873 (1994); and Black et al., <i>Virus Genes</i> 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells, such as the MOLT4, that may be used according to these assays are publicly available (e.g., through the ATCC).</p>
130	HOFOC73	429	Myoblast cell proliferation	<p>Assays for muscle cell proliferation are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit myoblast cell proliferation. Exemplary assays for myoblast cell proliferation that may be used or routinely modified to test activity of polypeptides and antibodies of the</p>

131	HOQB182	430	Insulin Secretion	<p>invention (including agonists or antagonists of the invention) include, for example, assays disclosed in: Soeta, C., et al. "Possible role for the c-ski gene in the proliferation of myogenic cells in regenerating skeletal muscles of rats" <i>Dev Growth Differ</i> Apr;43(2):155-64 (2001); Ewton DZ, et al., "IGF binding proteins-4, -5 and -6 may play specialized roles during L6 myoblast proliferation and differentiation" <i>J Endocrinol Mar</i>;144(3):539-53 (1995); and, Pampusch MS, et al., "Effect of transforming growth factor beta on proliferation of L6 and embryonic porcine myogenic cells" <i>J Cell Physiol Jun</i>;143(3):524-8 (1990); the contents of each of which are herein incorporated by reference in their entirety. Exemplary myoblast cells that may be used according to these assays include the rat myoblast L6 cell line. Rat myoblast L6 cells are an adherent rat myoblast cell line, isolated from primary cultures of rat thigh muscle, that fuse to form multinucleated myotubes and striated fibers after culture in differentiation media.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., <i>Endocr J</i>, 47(3):261-9 (2000); Salapatek, A.M., et al., <i>Mol Endocrinol</i>, 13(8):1305-17 (1999); Filipsson, K., et al., <i>Ann N Y Acad Sci</i>, 865:441-4 (1998); Olson, L.K., et al., <i>J Biol Chem</i>, 271(28):16544-52 (1996); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem J</i>, 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p>
132	HOSEY40	431	Regulation of transcription through the FAS promoter element in	<p>Assays for the regulation of transcription through the FAS promoter element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the FAS promoter element in a reporter construct and to regulate transcription of FAS, a key enzyme for lipogenesis. FAS promoter is regulated by many transcription factors including SREBP. Insulin increases FAS gene transcription in</p>

133	HOSDJ25	432	hepatocytes	<p>livers of diabetic mice. This stimulation of transcription is also somewhat glucose dependent. Exemplary assays that may be used or routinely modified to test for FAS promoter element activity (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Xiong, S., et al., <i>Proc Natl Acad Sci U.S.A.</i>, 97(8):3948-53 (2000); Roder, K., et al., <i>Eur J Biochem</i>, 260(3):743-51 (1999); Oskoui B, et al., <i>Biochem J</i>, 317 (Pt 1):257-65 (1996); Berger, et al., <i>Gene</i> 66:1-10 (1988); and, Cullen, B., et al., <i>Methods in Enzymol.</i> 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays, such as H4IIE cells, are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays include rat liver hepatoma cell line(s) inducible with glucocorticoids, insulin, or cAMP derivatives.</p>
133	HOSDJ25	432	Production of ICAM-1	<p>Assays for measuring expression of ICAM-1 are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate ICAM-1 expression. Exemplary assays that may be used or routinely modified to measure ICAM-1 expression include assays disclosed in: Rolfe BE, et al., <i>Atherosclerosis</i>, 149(1):99-110 (2000); Panettieri RA Jr, et al., <i>J Immunol</i>, 154(5):2358-2365 (1995); and, Grunstein MM, et al., <i>Am J Physiol Lung Cell Mol Physiol</i>, 278(6):L1154-L1163 (2000), the contents of each of which is herein incorporated by reference in its entirety. Cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include Aortic Smooth Muscle Cells (AOSMC); such as bovine AOSMC.</p>
133	HOSDJ25	432	Regulation of apoptosis in pancreatic beta cells.	<p>Caspase Apoptosis. Assays for caspase apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote caspase protease-mediated apoptosis. Apoptosis in pancreatic beta is associated with induction and progression of diabetes. Exemplary assays for caspase apoptosis that may be used or routinely modified to test caspase apoptosis activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in: Loweth, AC, et al., <i>FEBS Lett</i>, 400(3):285-8 (1997); Saini, KS, et al., <i>Biochem Mol Biol Int</i>, 39(6):1229-36 (1996); Krauthelm, A., et al., <i>Br J Pharmacol</i>, 129(4):687-94 (2000); Chandra J, et al., <i>Diabetes</i>, 50 Suppl 1:S44-7 (2001); Suk K, et al., <i>J Immunol</i>, 166(7):4481-9 (2001); Tejedo J, et al., <i>FEBS Lett</i>, 459(2):238-43 (1999); Zhang, S., et al., <i>FEBS Lett</i>, 455(3):315-20 (1999); Lee et al., <i>FEBS Lett</i> 485(2-3): 122-126 (2000); Nor et al., <i>J Vasc Res</i> 37(3): 209-218 (2000); and Karsan and Harlan, <i>J Atheroscler Thromb</i> 3(2): 75-80 (1996); the contents of each of which are herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly</p>

133	HOSDJ25	432	Activation of transcription through NFAT response element in immune cells (such as natural killer cells).	<p>available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include RIN-m. RIN-m is a rat adherent pancreatic beta cell insulinoma cell line derived from a radiation induced transplantable rat islet cell tumor. The cells produce and secrete islet polypeptide hormones, and produce insulin, somatostatin, and possibly glucagon. ATTC: #CRL-2057 Chick et al. Proc. Natl. Acad. Sci. 1977 74:628; AF et al. Proc. Natl. Acad. Sci. 1980 77:3519.</p> <p>Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions. Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Aramburu et al., J Exp Med 182(3):801-810 (1995); De Boer et al., Int J Biochem Cell Biol 31(10):1221-1236 (1999); Fraser et al., Eur J Immunol 29(3):838-844 (1999); and Yeseen et al., J Biol Chem 268(19):14285-14293 (1993), the contents of each of which are herein incorporated by reference in its entirety. NK cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human NK cells that may be used according to these assays include the NK-YT cell line, which is a human natural killer cell line with cytolytic and cytotoxic activity.</p>
134	HPEAD79	433	Regulation of transcription via DMEF1 response element in adipocytes and pre-adipocytes	<p>Assays for the regulation of transcription through the DMEF1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the DMEF1 response element in a reporter construct (such as that containing the GLUT4 promoter) and to regulate insulin production. The DMEF1 response element is present in the GLUT4 promoter and binds to MEF2 transcription factor and another transcription factor that is required for insulin regulation of Glut4 expression in skeletal muscle. GLUT4 is the primary insulin-responsive glucose transporter in fat and muscle tissue. Exemplary assays that may be used or routinely modified to test for DMEF1 response element activity (in adipocytes and pre-adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Thai, M.V., et al., J Biol Chem, 273(23):14285-92 (1998); Mora, S., et al., J Biol Chem, 275(21):16323-8 (2000); Liu, M.L., et al., J Biol Chem, 269(45):28514-21 (1994); "Identification of a 30-base pair regulatory element and novel DNA binding protein that regulates the human GLUT4 promoter in transgenic mice", J Biol Chem. 2000 Aug 4;275(31):23666-73; Berger, et al.,</p>

135	HP1BO15	434	Regulation of viability and proliferation of pancreatic beta cells.	<p>Gene 66:1-10 (1988); and, Cullen, B., et al., <i>Methods in Enzymol.</i> 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Adipocytes and pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include the mouse 3T3-L1 cell line which is an adherent mouse preadipocyte cell line. Mouse 3T3-L1 cells are a continuous substrain of 3T3 fibroblasts developed through clonal isolation. These cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p> <p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Friedrichsen BN, et al., <i>Mol Endocrinol</i>, 15(1):136-48 (2001); Huotari MA, et al., <i>Endocrinology</i>, 139(4):1494-9 (1998); Hugl SR, et al., <i>J Biol Chem</i> 1998 Jul 10;273(28):17771-9 (1998), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion.</p> <p>References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p>
135	HP1BO15	434	Production of IL-6	<p>IL-6 FMAT. IL-6 is produced by T cells and has strong effects on B cells. IL-6 participates in IL-4 induced IgE production and increases IgA production (IgA plays a role in mucosal immunity). IL-6 induces cytotoxic T cells. Deregulated expression of IL-6 has been linked to autoimmune disease, plasmacytomas, myelomas, and chronic hyperproliferative diseases. Assays for immunomodulatory and differentiation factor proteins produced by a large variety of cells where the expression level is strongly regulated by cytokines, growth factors, and hormones are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation and differentiation and modulate T cell proliferation and function. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines, such as IL-6, and the stimulation and upregulation of T cell proliferation and functional activities. Such assays that may be used or routinely modified to test immunomodulatory and</p>

136	HP/BI33	435	Stimulation of insulin secretion from pancreatic beta cells.	<p>differentiation activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204 (1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); and Verhasselt et al., J Immunol 158:2919-2925 (1997), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li, M., et al., Endocrinology, 138(9):3735-40 (1997); Kim, K.H., et al., FEBS Lett, 377(2):237-9 (1995); and, Miraglia S et al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. Endocrinology 1992 130:167.</p>
137	HP/BK12	436	Insulin Secretion	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., Endocr J, 47(3):261-9 (2000); Salapatek, A.M., et al., Mol Endocrinol, 13(8):1305-17 (1999); Filipsson, K., et al., Ann N Y Acad Sci, 865:441-4 (1998); Olson, L.K., et al., J Biol Chem, 271(28):16544-52 (1996); and, Miraglia S et al., Journal of</p>

137	HPJBK12	436	Regulation of apoptosis of immune cells (such as mast cells).	<p>Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p> <p>Caspase Apoptosis. Assays for caspase apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate caspase protease-mediated apoptosis in immune cells (such as, for example, in mast cells). Mast cells are found in connective and mucosal tissues throughout the body, and their activation via immunoglobulin E-antigen, promoted by T helper cell type 2 cytokines, is an important component of allergic disease. Dysregulation of mast cell apoptosis may play a role in allergic disease and mast cell tumor survival. Exemplary assays for caspase apoptosis that may be used or routinely modified to test caspase apoptosis activity induced by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in: Masuda A, et al., J Biol Chem, 276(28):26107-26113 (2001); Yeatman CF 2nd, et al., J Exp Med, 192(8):1093-1103 (2000); Lee et al., FEBS Lett 485(2-3): 122-126 (2000); Nor et al., J Vasc Res 37(3): 209-218 (2000); and Karsan and Harlan, J Atheroscler Thromb 3(2): 75-80 (1996); the contents of each of which are herein incorporated by reference in its entirety. Immune cells that may be used according to these assays are publicly available (e.g., through commercial sources). Exemplary immune cells that may be used according to these assays include mast cells such as the HMC human mast cell line.</p>
137	HPJBK12	436	Activation of Endothelial Cell p38 or JNK Signaling Pathway.	<p>Kinase assay. JNK and p38 kinase assays for signal transduction that regulate cell proliferation, activation, or apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit cell proliferation, activation, and apoptosis. Exemplary assays for JNK and p38 kinase activity that may be used or routinely modified to test JNK and p38 kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Forrer et al., Biol Chem 379(8-9):1101-1110 (1998); Gupta et al., Exp Cell Res 247(2): 495-504 (1999); Kyriakis JM, Biochem Soc Symp 64:29-48 (1999); Chang and Karin, Nature 410(6824):37-40 (2001); and Cobb MH, Prog Biophys Mol Biol 71(3-4):479-500 (1999); the contents of each of which are herein incorporated by reference in its entirety. Endothelial cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary endothelial cells</p>

138	HPMDK28	437	Stimulation of Calcium Flux in pancreatic beta cells.	<p>that may be used according to these assays include human umbilical vein endothelial cells (HUVEC), which are endothelial cells which line venous blood vessels, and are involved in functions that include, but are not limited to, angiogenesis, vascular permeability, vascular tone, and immune cell extravasation.</p> <p>Assays for measuring calcium flux are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mobilize calcium. For example, the FLPR assay may be used to measure influx of calcium. Cells normally have very low concentrations of cytosolic calcium compared to much higher extracellular calcium. Extracellular factors can cause an influx of calcium, leading to activation of calcium responsive signaling pathways and alterations in cell functions. Exemplary assays that may be used or routinely modified to measure calcium flux by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Satin L.S., et al., Endocrinology, 136(10):4589-601 (1995); Mogami H., et al., Endocrinology, 136(7):2960-6 (1995); Richardson SB, et al., Biochem J, 288 (Pt 3):847-51 (1992); and, Meats, J.E., et al., Cell Calcium 1989 Nov-Dec;10(8):535-41 (1989), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT-T15 Cells. HIT-T15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATCC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p>
139	HPRAL78	438	Regulation of transcription via DMEF1 response element in adipocytes and pre-adipocytes	<p>Assays for the regulation of transcription through the DMEF1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the DMEF1 response element in a reporter construct (such as that containing the GLUT4 promoter) and to regulate insulin production. The DMEF1 response element is present in the GLUT4 promoter and binds to MEF2 transcription factor and another transcription factor that is required for insulin regulation of Glut4 expression in skeletal muscle. GLUT4 is the primary insulin-responsive glucose transporter in fat and muscle tissue. Exemplary assays that may be used or routinely modified to test for DMEF1 response element activity (in adipocytes and pre-adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Thai, M.V., et al., J Biol Chem, 273(23):14285-92 (1998); Mora, S., et al., J Biol Chem, 275(21):16323-8 (2000); Liu, M.L., et al., J Biol Chem, 269(45):28514-21 (1994); "Identification of a 30-base pair regulatory element and novel DNA binding protein that regulates the human GLUT4 promoter in transgenic mice", J Biol Chem. 2000 Aug 4;275(31):23666-73; Berger, et al.,</p>

140	HRABA80	439	Insulin Secretion	<p>Gene 66:1-10 (1988); and, Cullen, B., et al., <i>Methods in Enzymol.</i> 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Adipocytes and pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include the mouse 3T3-L1 cell line which is an adherent mouse preadipocyte cell line. Mouse 3T3-L1 cells are a continuous substrain of 3T3 fibroblasts developed through clonal isolation. These cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., <i>Endocr J.</i> 47(3):261-9 (2000); Salapatek, A.M., et al., <i>Mol Endocrinol.</i> 13(8):1305-17 (1999); Filipsson, K., et al., <i>Ann N Y Acad Sci.</i> 865:441-4 (1998); Olson, L.K., et al., <i>J Biol Chem.</i> 271(28):16544-52 (1996); and, Miraglia S et. al., <i>Journal of Biomolecular Screening.</i> 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J.</i> 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p> <p>Kinase assay. Kinase assays, for example an Elk-1 kinase assay, for ERK signal transduction that regulate cell proliferation or differentiation are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit cell proliferation, activation, and differentiation. Exemplary assays for ERK kinase activity that may be used or routinely modified to test ERK kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Forrer et al., <i>Biol Chem</i> 379(8-9):1101-1110 (1998); Berra et al., <i>Biochem Pharmacol</i> 60(8):1171-1178 (2000); Gupta et al., <i>Exp Cell Res</i> 247(2):495-504 (1999); Chang and Karin, <i>Nature</i> 410(6824):37-40 (2001); and Cobb MH, <i>Prog Biophys Mol Biol</i> 71(3-4):479-</p>
140	HRABA80	439	Activation of Endothelial Cell ERK Signaling Pathway.	

140	HRABA80	439	Upregulation of CD152 and activation of T cells	<p>500 (1999); the contents of each of which are herein incorporated by reference in its entirety. Endothelial cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary endothelial cells that may be used according to these assays include human umbilical vein endothelial cells (HUVEC), which are endothelial cells which line venous blood vessels, and are involved in functions that include, but are not limited to, angiogenesis, vascular permeability, vascular tone, and immune cell extravasation.</p> <p>CD152 FMTAT. CD152 (a.k.a. CTLA-4) expression is restricted to activated T cells. CD152 is a negative regulator of T cell proliferation. Reduced CD152 expression has been linked to hyperproliferative and autoimmune diseases. Overexpression of CD152 may lead to impaired immunoresponses. Assays for immunomodulatory proteins important in the maintenance of T cell homeostasis and expressed almost exclusively on CD4+ and CD8+ T cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to modulate the activation of T cells, maintain T cell homeostasis, and/or mediate humoral or cell-mediated immunity. Exemplary assays that test for immunomodulatory proteins evaluate the upregulation of cell surface markers, such as CD152, and the activation of T cells. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include, for example, the assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204 (1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); McCoy et al., Immunol Cell Biol 77(1):1-10 (1999); Oostervegal et al., Curr Opin Immunol 11(3):294-300 (1999); and Saito T, Curr Opin Immunol 10(3):313-321 (1998), the contents of each of which are herein incorporated by reference in its entirety. Human T cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human T cells are primary human lymphocytes that mature in the thymus and express a T Cell receptor and CD3, CD4, or CD8. These cells mediate humoral or cell-mediated immunity and may be preactivated to enhance responsiveness to immunomodulatory factors.</p> <p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and MEed identified as putative PPAR response elements. ME promoter may also respond to API1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the</p>
141	HRACD15	440	Regulation of transcription of Malic Enzyme in hepatocytes	

141	HRACD15	440	Activation of T-Cell p38 or JNK Signaling Pathway.	<p>invention) include assays disclosed in: Streeter, R.S., et al., Mol Endocrinol, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., Mol Endocrinol, 8(10):1361-9 (1994); Barroso, I., et al., J Biol Chem, 274(25):17997-8004 (1999); Ijpenberg, A., et al., J Biol Chem, 272(32):20108-20117 (1997); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays includes the mouse 3T3-L1 cell line. 3T3-L1 is a mouse preadipocyte cell line (adherent). It is a continuous substrain of 3T3 fibroblasts developed through clonal isolation. Cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p> <p>Kinase assay. JNK and p38 kinase assays for signal transduction that regulate cell proliferation, activation, or apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit immune cell (e.g. T-cell) proliferation, activation, and apoptosis. Exemplary assays for JNK and p38 kinase activity that may be used or routinely modified to test JNK and p38 kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Forrer et al., Biol Chem 379(8-9):1101-1110 (1998); Gupta et al., Exp Cell Res 247(2): 495-504 (1999); Kyriakis JM, Biochem Soc Symp 64:29-48 (1999); Chang and Karin, Nature 410(6824):37-40 (2001); and Cobb MH, Prog Biophys Mol Biol 71(3-4):479-500 (1999); the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell line, which is an IL-2 dependent suspension-culture cell line with cytotoxic activity.</p> <p>Caspase Apoptosis. Assays for caspase apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate caspase mediated apoptosis in immune cells (such as, for example, in mast cells). Mast cells are found in connective and mucosal tissues throughout the body, and their activation via immunoglobulin E-antigen, promoted by T helper cell type 2 cytokines, is an important component of allergic disease. Dysregulation of mast cell apoptosis may play a role in allergic disease and mast cell tumor survival. Exemplary assays for caspase apoptosis that may be used or routinely modified to test caspase apoptosis activity induced by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in: Masuda A, et al., J Biol Chem, 276(28):26107-26113 (2001); Yearman CF 2nd, et al., J Exp Med, 192(8):1093-1103 (2000); Lee et al., FEBS Lett 485(2-3): 122-126 (2000); Nor et al., J Vasc Res 37(3): 209-218 (2000); and</p>
141	HRACD15	440	Regulation of apoptosis of immune cells (such as mast cells).	

142	HRACJ35	441	Regulation of transcription of Malic Enzyme in hepatocytes	<p>Karsan and Harlan, J Atheroscler Thromb 3(2): 75-80 (1996); the contents of each of which are herein incorporated by reference in its entirety. Immune cells that may be used according to these assays are publicly available (e.g., through commercial sources). Exemplary immune cells that may be used according to these assays include mast cells such as the HMC human mast cell line.</p> <p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and MED identified as putative PPAR response elements. ME promoter may also respond to AP1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeter, R.S., et al., Mol Endocrinol, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., Mol Endocrinol, 8(10):1361-9 (1994); Barros, I., et al., J Biol Chem, 274(25):17997-8004 (1999); Ijpenberg, A., et al., J Biol Chem, 272(32):20108-20117 (1997); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays includes the mouse 3T3-L1 cell line. 3T3-L1 is a mouse preadipocyte cell line (adherent). It is a continuous substrain of 3T3 fibroblasts developed through clonal isolation. Cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p>
142	HRACJ35	441	Production of VCAM in endothelial cells (such as human umbilical vein endothelial cells (HUVEC))	<p>Assays for measuring expression of VCAM are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate VCAM expression. For example, FMAT may be used to measure the upregulation of cell surface VCAM-1 expression in endothelial cells. Endothelial cells are cells that line blood vessels, and are involved in functions that include, but are not limited to, angiogenesis, vascular permeability, vascular tone, and immune cell extravasation. Exemplary endothelial cells that may be used according to these assays include human umbilical vein endothelial cells (HUVEC), which are available from commercial sources. The expression of VCAM (CD106), a membrane-associated protein, can be upregulated by cytokines or other factors, and contributes to the extravasation of lymphocytes, leucocytes and other immune cells from blood vessels; thus VCAM expression plays a role in promoting immune and inflammatory responses.</p>
143	HRGBL78	442	Stimulation of	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely</p>

144	HROAJ39	443	insulin secretion from pancreatic beta cells.	<p>modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>Assays for measuring calcium flux are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mobilize calcium. For example, the FLPR assay may be used to measure influx of calcium. Cells normally have very low concentrations of cytosolic calcium compared to much higher extracellular calcium. Extracellular factors can cause an influx of calcium, leading to activation of calcium responsive signaling pathways and alterations in cell functions. Exemplary assays that may be used or routinely modified to measure calcium flux by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Satin LS, et al., <i>Endocrinology</i>, 136(10):4589-601 (1995); Mogami H, et al., <i>Endocrinology</i>, 136(7):2960-6 (1995); Richardson SB, et al., <i>Biochem J</i>, 288 (Pt 3):847-51 (1992); and, Meats, JE, et al., <i>Cell Calcium</i> 1989 Nov-Dec;10(8):535-41 (1989), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT-T15 Cells. HIT-T15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATCC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J</i> 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p>
145	HROBD68	444	Regulation of	Caspase Apoptosis. Assays for caspase apoptosis are well known in the art and may be used or

146	HSAWD74	445	apoptosis in pancreatic beta cells.	<p>routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote caspase protease-mediated apoptosis. Apoptosis in pancreatic beta is associated with induction and progression of diabetes. Exemplary assays for caspase apoptosis that may be used or routinely modified to test caspase apoptosis activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in: Loweth, AC, et al., FEBS Lett, 400(3):285-8 (1997); Saini, KS, et al., Biochem Mol Biol Int, 39(6):1229-36 (1996); Krauthaim, A., et al., Br J Pharmacol, 129(4):687-94 (2000); Chandra J, et al., Diabetes, 50 Suppl 1:S44-7 (2001); Suk K, et al., J Immunol, 166(7):4481-9 (2001); Tejedo J, et al., FEBS Lett, 459(2):238-43 (1999); Zhang, S., et al., FEBS Lett, 455(3):315-20 (1999); Lee et al., FEBS Lett 485(2-3): 122-126 (2000); Nor et al., J Vasc Res 37(3): 209-218 (2000); and Karsan and Harlan, J Atheroscler Thromb 3(2): 75-80 (1996); the contents of each of which are herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include RIN-m. RIN-m is a rat adherent pancreatic beta cell insulinoma cell line derived from a radiation induced transplantable rat islet cell tumor. The cells produce and secrete islet polypeptide hormones, and produce insulin, somatostatin, and possibly glucagon. ATCC: #CRL-2057 Chick et al. Proc. Natl. Acad. Sci. 1977 74:628; AF et al. Proc. Natl. Acad. Sci. 1980 77:3519.</p>
146	HSAWD74	445	Regulation of transcription via DMEF1 response element in adipocytes and pre-adipocytes	<p>Assays for the regulation of transcription through the DMEF1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the DMEF1 response element in a reporter construct (such as that containing the GLUT4 promoter) and to regulate insulin production. The DMEF1 response element is present in the GLUT4 promoter and binds to MEF2 transcription factor and another transcription factor that is required for insulin regulation of Glut4 expression in skeletal muscle. GLUT4 is the primary insulin-responsive glucose transporter in fat and muscle tissue. Exemplary assays that may be used or routinely modified to test for DMEF1 response element activity (in adipocytes and pre-adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Thai, M.V., et al., J Biol Chem, 273(23):14285-92 (1998); Mora, S., et al., J Biol Chem, 275(21):16323-8 (2000); Liu, M.L., et al., J Biol Chem, 269(45):28514-21 (1994); "Identification of a 30-base pair regulatory element and novel DNA binding protein that regulates the human GLUT4 promoter in transgenic mice", J Biol Chem. 2000 Aug 4;275(31):23666-73; Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Adipocytes and pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be</p>

146	HSABD74	445	Activation of transcription through NFAT response element in immune cells (such as mast cells).	<p> routinely generated. Exemplary cells that may be used according to these assays include the mouse 3T3-L1 cell line which is an adherent mouse preadipocyte cell line. Mouse 3T3-L1 cells are a continuous substrain of 3T3 fibroblasts developed through clonal isolation. These cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p> <p> This reporter assay measures activation of the NFAT signaling pathway in HMC-1 human mast cell line. Activation of NFAT in mast cells has been linked to cytokine and chemokine production. Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions.</p> <p> Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); De Boer et al., Int J Biochem Cell Biol 31(10):1221-1236 (1999); Ali et al., J Immunol 165(12):7215-7223 (2000); Hutchinson and McCloskey, J Biol Chem 270(27):16333-16338 (1995), and Turner et al., J Exp Med 188:527-537 (1998), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p>
147	HSDEK49	446	Activation of transcription through serum response element in immune cells (such as T-cells).	<p> Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate the serum response factors and modulate the expression of genes involved in growth. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell line, which is an IL-2 dependent suspension culture of T cells with cytotoxic activity.</p>

147	HSDEK49	446	Regulation of transcription of Malic Enzyme in adipocytes	<p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and ME₂ identified as putative PPAR response elements. ME promoter may also respond to AP1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeter, R.S., et al., Mol Endocrinol, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., Mol Endocrinol, 8(10):1361-9 (1994); Barroso, I., et al., J Biol Chem, 274(25):17997-8004 (1999); Ijpenberg, A., et al., J Biol Chem, 272(32):20108-20117 (1997); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays includes the H4IIE rat liver hepatoma cell line.</p>
148	HSDFJ26	447	Regulation of transcription through the PEPCK promoter in hepatocytes	<p>Assays for the regulation of transcription through the PEPCK promoter are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the PEPCK promoter in a reporter construct and regulate liver gluconeogenesis. Exemplary assays for regulation of transcription through the PEPCK promoter that may be used or routinely modified to test for PEPCK promoter activity (in hepatocytes) of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Lochhead et al., Diabetes 49(6):896-903 (2000); and Yeagley et al., J Biol Chem 275(23):17814-17820 (2000), the contents of each of which is herein incorporated by reference in its entirety. Hepatocyte cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary liver hepatoma cells that may be used according to these assays include H4IIE cells, which contain a tyrosine amino transferase that is inducible with glucocorticoids, insulin, or cAMP derivatives.</p>
149	HSDSB09	448	Regulation of transcription via DMEF1 response	<p>Assays for the regulation of transcription through the DMEF1 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the DMEF1 response element in a reporter construct (such as that containing the GLUT4 promoter) and to regulate insulin production. The</p>

149	HSDSB09	448	<p>element in adipocytes and pre-adipocytes</p>	<p>DMEF1 response element is present in the GLUT4 promoter and binds to MEF2 transcription factor and another transcription factor that is required for insulin regulation of Glut4 expression in skeletal muscle. GLUT4 is the primary insulin-responsive glucose transporter in fat and muscle tissue. Exemplary assays that may be used or routinely modified to test for DMEF1 response element activity (in adipocytes and pre-adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Thai, M.V., et al., J Biol Chem, 273(23): 14285-92 (1998); Mora, S., et al., J Biol Chem, 275(21): 16323-8 (2000); Liu, M.L., et al., J Biol Chem, 269(45): 28514-21 (1994); "Identification of a 30-base pair regulatory element and novel DNA binding protein that regulates the human GLUT4 promoter in transgenic mice", J Biol Chem. 2000 Aug 4; 275(31): 23666-73; Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Adipocytes and pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include the mouse 3T3-L1 cell line which is an adherent mouse preadipocyte cell line. Mouse 3T3-L1 cells are a continuous substrain of 3T3 fibroblasts developed through clonal isolation. These cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p>
			<p>Activation of transcription through cAMP response element (CRE) in pre-adipocytes.</p>	<p>Assays for the activation of transcription through the cAMP response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to increase cAMP, regulate CREB transcription factors, and modulate expression of genes involved in a wide variety of cell functions. For example, a 3T3-L1/CRE reporter assay may be used to identify factors that activate the cAMP signaling pathway. CREB plays a major role in adipogenesis, and is involved in differentiation into adipocytes. CRE contains the binding sequence for the transcription factor CREB (CRE binding protein). Exemplary assays for transcription through the cAMP response element that may be used or routinely modified to test cAMP-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1988); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Reusch et al., Mol Cell Biol 20(3):1008-1020 (2000); and Klemm et al., J Biol Chem 273:917-923 (1998), the contents of each of which are herein incorporated by reference in its entirety. Pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.</p>

149	HSDSB09	448	Activation of transcription through serum response element in pre-adipocytes.	Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate the serum response factors and modulate the expression of genes involved in growth. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. Pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.
149	HSDSB09	448	Activation of transcription through serum response element in immune cells (such as T-cells).	Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate the serum response factors and modulate the expression of genes involved in growth. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell line, which is an IL-2 dependent suspension culture of T cells with cytotoxic activity.
149	HSDSB09	448	Regulation of transcription of Malic Enzyme in adipocytes	Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and MEd identified as putative PPAR response elements. ME promoter may also respond to AP1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the

149	HSDSB09	448	Stimulation of Calcium Flux in pancreatic beta cells.	<p>invention) include assays disclosed in: Streeter, R.S., et al., Mol Endocrinol, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., Mol Endocrinol, 8(10):1361-9 (1994); Barroso, L., et al., J Biol Chem, 274(25):17997-8004 (1999); Ijpenberg, A., et al., J Biol Chem, 272(32):20108-20117 (1997); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays includes the H4IIE rat liver hepatoma cell line.</p> <p>Assays for measuring calcium flux are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mobilize calcium. For example, the FLPR assay may be used to measure influx of calcium. Cells normally have very low concentrations of cytosolic calcium compared to much higher extracellular calcium. Extracellular factors can cause an influx of calcium, leading to activation of calcium responsive signaling pathways and alterations in cell functions. Exemplary assays that may be used or routinely modified to measure calcium flux by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Satin LS, et al., Endocrinology, 136(10):4589-601 (1995); Mogami H, et al., Endocrinology, 136(7):2960-6 (1995); Richardson SB, et al., Biochem J, 288 (Pt 3):847-51 (1992); and, Meats, JE, et al., Cell Calcium 1989 Nov-Dec;10(8):535-41 (1989), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p> <p>This reporter assay measures activation of the GATA-3 signaling pathway in HMC-1 human mast cell line. Activation of GATA-3 in mast cells has been linked to cytokine and chemokine production. Assays for the activation of transcription through the GATA3 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate GATA3 transcription factors and modulate expression of mast cell genes important for immune response development. Exemplary assays for transcription through the GATA3 response element that may be used or routinely modified to test GATA3-response element activity of polypeptides of the invention (including antibodies and agonists or</p>
149	HSDSB09	448	Activation of transcription through GATA-3 response element in immune cells (such as mast cells).	

149	HSDSB09	448	Activation of transcription through NFAT response element in immune cells (such as mast cells).	<p>antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Flavell et al., Cold Spring Harb Symp Quant Biol 64:563-571 (1999); Rodriguez-Palmero et al., Eur J Immunol 29(12):3914-3924 (1999); Zheng and Flavell, Cell 89(4):587-596 (1997); and Henderson et al., Mol Cell Biol 14(6):4286-4294 (1994), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p> <p>This reporter assay measures activation of the NFAT signaling pathway in HMC-1 human mast cell line. Activation of NFAT in mast cells has been linked to cytokine and chemokine production. Assays for the activation of transcription through the Nuclear Factor of Activated T cells (NFAT) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFAT transcription factors and modulate expression of genes involved in immunomodulatory functions. Exemplary assays for transcription through the NFAT response element that may be used or routinely modified to test NFAT-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); De Boer et al., Int J Biochem Cell Biol 31(10):1221-1236 (1999); Ali et al., J Immunol 165(12):7215-7223 (2000); Hutchinson and McCloskey, J Biol Chem 270(27):16333-16338 (1995), and Turner et al., J Exp Med 188:527-537 (1998), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p>
149	HSDSB09	448	Activation of transcription through NFkB response element in immune cells (such as mast cells).	<p>This reporter assay measures activation of the NFkB signaling pathway in HMC-1 human mast cell line. Activation of NFkB in mast cells has been linked to production of certain cytokines, such as IL-6 and IL-9. Assays for the activation of transcription through the NFkB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFkB transcription factors and modulate expression of immunomodulatory genes. Exemplary assays for transcription through the NFkB response element that may be used or routinely modified to test NFkB-response element activity</p>

149	HDSB09	448	cells).	<p>of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Stassen et al., J Immunol 166(7):4391-8 (2001); and Marquardt and Walker, J Allergy Clin Immunol 105(3):500-5 (2000), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p> <p>Assays for the activation of transcription through the Signal Transducers and Activators of Transcription (STAT6) response element in immune cells (such as in the human HMC-1 mast cell line) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate STAT6 transcription factors and modulate the expression of multiple genes. Exemplary assays for transcription through the STAT6 response element that may be used or routinely modified to test STAT6 response element activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Sherman, Immunol Rev 179:48-56 (2001); Malaviya and Uckun, J Immunol 168:421-426 (2002); Masuda et al., J Biol Chem 275(38):29331-29337 (2000); and Masuda et al., J Biol Chem 276:26107-26113 (2001), the contents of each of which are herein incorporated by reference in its entirety. Mast cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human mast cells that may be used according to these assays include the HMC-1 cell line, which is an immature human mast cell line established from the peripheral blood of a patient with mast cell leukemia, and exhibits many characteristics of immature mast cells.</p>
149	HDSB09	448	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li, M., et al., Endocrinology, 138(9):3735-40 (1997); Kim, K.H., et al., FEBS Lett, 377(2):237-9 (1995);</p>

149	HDSB09	448	Activation of transcription through NFκB response element in immune cells (such as basophils).	<p>and, Miraglia S et. al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>This reporter assay measures activation of the NFκB signaling pathway in Ku812 human basophil cell line. Assays for the activation of transcription through the NFκB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFκB transcription factors and modulate expression of immunomodulatory genes. Exemplary assays for transcription through the NFκB response element that may be used or routinely modified to test NFκB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); Marone et al., <i>Int Arch Allergy Immunol</i> 114(3):207-17 (1997), the contents of each of which are herein incorporated by reference in its entirety. Basophils that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human basophil cell lines that may be used according to these assays include Ku812, originally established from a patient with chronic myelogenous leukemia. It is an immature prebasophilic cell line that can be induced to differentiate into mature basophils.</p>
149	HDSB09	448	Activation of transcription through STAT6 response element in immune cells (such as T-cells).	<p>Assays for the activation of transcription through the Signal Transducers and Activators of Transcription (STAT6) response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate STAT6 transcription factors and modulate the expression of multiple genes. Exemplary assays for transcription through the STAT6 response element that may be used or routinely modified to test STAT6 response element activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); Georas et al., <i>Blood</i> 92(12):4529-4538 (1998); Moffatt et al., <i>Transplantation</i> 69(7):1521-1523 (2000); Curiel et al., <i>Eur J Immunol</i> 27(8):1982-1987 (1997); and Masuda et al., <i>J Biol Chem</i> 275(38):29331-29337 (2000), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary T cells that may be used according to these assays include the SUPT cell line, which</p>

149	HSDSB09	448	Activation of transcription through serum response element in immune cells (such as natural killer cells).	<p>is a suspension culture of IL-2 and IL-4 responsive T cells.</p> <p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate serum response factors and modulate the expression of genes involved in growth and upregulate the function of growth-related genes in many cell types. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Benson et al., J Immunol 153(9):3862-3873 (1994); and Black et al., Virus Genes 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary T cells that may be used according to these assays include the NK-YT cell line, which is a human natural killer cell line with cytolytic and cytotoxic activity.</p>
150	HSDSE75	449	Myoblast cell proliferation	<p>Assays for muscle cell proliferation are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit myoblast cell proliferation. Exemplary assays for myoblast cell proliferation that may be used or routinely modified to test activity of polypeptides and antibodies of the invention (including agonists or antagonists of the invention) include, for example, assays disclosed in: Soeta, C., et al. "Possible role for the c-ski gene in the proliferation of myogenic cells in regenerating skeletal muscles of rats" Dev Growth Differ Apr;43(2):155-64 (2001); Ewton DZ, et al., "IGF binding proteins-4, -5 and -6 may play specialized roles during L6 myoblast proliferation and differentiation" J Endocrinol Mar;144(3):539-53 (1995); and, Pampusch MS, et al., "Effect of transforming growth factor beta on proliferation of L6 and embryonic porcine myogenic cells" J Cell Physiol Jun;143(3):524-8 (1990); the contents of each of which are herein incorporated by reference in their entirety. Exemplary myoblast cells that may be used according to these assays include the rat myoblast L6 cell line. Rat myoblast L6 cells are an adherent rat myoblast cell line, isolated from primary cultures of rat thigh muscle, that fuse to form multinucleated myotubes and striated fibers after culture in differentiation media.</p>
150	HSDSE75	449	Production of IL-6	<p>IL-6 FMAT. IL-6 is produced by T cells and has strong effects on B cells. IL-6 participates in IL-4 induced IgE production and increases IgA production (IgA plays a role in mucosal immunity). IL-6 induces cytotoxic T cells. Deregulated expression of IL-6 has been linked to autoimmune disease, plasmacytomas, myelomas, and chronic hyperproliferative diseases. Assays for immunomodulatory and differentiation factor proteins produced by a large variety of cells where the expression level is strongly</p>

151	HSDJ81	450	Insulin Secretion	<p>regulated by cytokines, growth factors, and hormones are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation and differentiation and modulate T cell proliferation and function. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines, such as IL-6, and the stimulation and upregulation of T cell proliferation and functional activities. Such assays that may be used or routinely modified to test immunomodulatory and differentiation activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204(1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); and Verhasselt et al., J Immunol 158:2919-2925 (1997), the contents of each of which are herein incorporated by reference in its entirety. Human dendritic cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human dendritic cells are antigen presenting cells in suspension culture, which, when activated by antigen and/or cytokines, initiate and upregulate T cell proliferation and functional activities.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., Endocr J, 47(3):261-9 (2000); Salapatek, A.M., et al., Mol Endocrinol, 13(8):1305-17 (1999); Filipsson, K., et al., Ann N Y Acad Sci, 865:441-4 (1998); Olson, L.K., et al., J Biol Chem, 271(28):16544-52 (1996); and, Miraglia S et. al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT T15 Cells. HIT T15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p> <p>Assays for the activation of transcription through the NFkB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including</p>
151	HSDJ81	450	Activation of transcription	

152	HSKDA27	451	through NFκB response element in neuronal cells (such as SKNMC cells).	<p>antibodies and agonists or antagonists of the invention) to regulate NFκB transcription factors and modulate expression of neuronal genes. Exemplary assays for transcription through the NFκB response element that may be used or routinely modified to test NFκB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Gill JS, et al., Neurobiol Dis. 7(4):448-461 (2000); Tamatani M, et al., J Biol Chem. 274(13):8531-8538 (1999); Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Valle Blazquez et al, Immunology 90(3):455-460 (1997); Aramburau et al., J Exp Med 82(3):801-810 (1995); and Fraser et al., 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. Neuronal cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary neuronal cells that may be used according to these assays include the SKNMC neuronal cell line.</p> <p>GM-CSF FMT. GM-CSF is expressed by activated T cells, macrophages, endothelial cells, and fibroblasts. GM-CSF regulates differentiation and proliferation of granulocytes- macrophage progenitors and enhances antimicrobial activity in neutrophils, monocytes and macrophage. Additionally, GM-CSF plays an important role in the differentiation of dendritic cells and monocytes, and increases antigen presentation. GM-CSF is considered to be a proinflammatory cytokine. Assays for immunomodulatory proteins that promote the production of GM-CSF are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation and modulate the growth and differentiation of leukocytes. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines, such as GM-CSF, and the activation of T cells. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204 (1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); and Ye et al., J Leukoc Biol (58(2):225-233, the contents of each of which are herein incorporated by reference in its entirety. Natural killer cells that may be used according to these assays are publicly available (e.g., through the ATCC) or may be isolated using techniques disclosed herein or otherwise known in the art. Natural killer (NK) cells are large granular lymphocytes that have cytotoxic activity but do bind antigen. NK cells show antibody-independent killing of tumor cells and also recognize antibody bound on target cells, via NK Fc receptors, leading to cell-mediated cytotoxicity.</p>
152	HSKDA27	451	Regulation of apoptosis in pancreatic beta	<p>Caspase Apoptosis. Assays for caspase apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote caspase protease-mediated apoptosis. Apoptosis in</p>

153	HSKGN81	452	cells.	<p>pancreatic beta is associated with induction and progression of diabetes. Exemplary assays for caspase apoptosis that may be used or routinely modified to test caspase apoptosis activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in: Loweth, AC, et al., FEBS Lett, 400(3):285-8 (1997); Saini, KS, et al., Biochem Mol Biol Int, 39(6):1229-36 (1996); Krauthaim, A., et al., Br J Pharmacol, 129(4):687-94 (2000); Chandra J, et al., Diabetes, 50 Suppl 1:S44-7 (2001); Suk K, et al., J Immunol, 166(7):4481-9 (2001); Tejedo J, et al., FEBS Lett, 459(2):238-43 (1999); Zhang, S., et al., FEBS Lett, 455(3):315-20 (1999); Lee et al., FEBS Lett 485(2-3): 122-126 (2000); Nor et al., J Vasc Res 37(3): 209-218 (2000); and Karsan and Harlan, J Atheroscler Thromb 3(2): 75-80 (1996); the contents of each of which are herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include RIN-m. RIN-m is a rat adherent pancreatic beta cell insulinoma cell line derived from a radiation induced transplantable rat islet cell tumor. The cells produce and secrete islet polypeptide hormones, and produce insulin, somatostatin, and possibly glucagon. ATTC: #CRL-2057 Chick et al. Proc. Natl. Acad. Sci. 1977 74:628; AF et al. Proc. Natl. Acad. Sci. 1980 77:3519.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li, M., et al., Endocrinology, 138(9):3735-40 (1997); Kim, K.H., et al., FEBS Lett, 377(2):237-9 (1995); and, Miraglia S et. al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. Endocrinology 1992 130:167.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or</p>
154	HSNAD72	453	Stimulation of insulin secretion	

155	HSNMC45	454	from pancreatic beta cells.	<p>antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>Assays for measuring calcium flux are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mobilize calcium. For example, the FLPR assay may be used to measure influx of calcium. Cells normally have very low concentrations of cytosolic calcium compared to much higher extracellular calcium. Extracellular factors can cause an influx of calcium, leading to activation of calcium responsive signaling pathways and alterations in cell functions. Exemplary assays that may be used or routinely modified to measure calcium flux by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Satin LS, et al., <i>Endocrinology</i>, 136(10):4589-601 (1995); Mogami H, et al., <i>Endocrinology</i>, 136(7):2960-6 (1995); Richardson SB, et al., <i>Biochem J</i>, 288 (Pt 3):847-51 (1992); and, Meats, JE, et al., <i>Cell Calcium</i> 1989 Nov-Dec;10(8):535-41 (1989), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J.</i> 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p>
156	HSQFP66	455	Stimulation of insulin secretion	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or</p>

157	HSRFZ57	456	from pancreatic beta cells.	<p>antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>Assays for the regulation of transcription through the FAS promoter element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the FAS promoter element in a reporter construct and to regulate transcription of FAS, a key enzyme for lipogenesis. FAS promoter is regulated by many transcription factors including SREBP. Insulin increases FAS gene transcription in livers of diabetic mice. This stimulation of transcription is also somewhat glucose dependent. Exemplary assays that may be used or routinely modified to test for FAS promoter element activity (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Xiong, S., et al., <i>Proc Natl Acad Sci U.S.A.</i>, 97(8):3948-53 (2000); Roder, K., et al., <i>Eur J Biochem</i>, 260(3):743-51 (1999); Oskouian B, et al., <i>Biochem J</i>, 317 (Pt 1):257-65 (1996); Berger, et al., <i>Gene</i> 66:1-10 (1988); and, Cullen, B., et al., <i>Methods in Enzymol.</i> 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays, such as H4IIE cells, are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays include rat liver hepatoma cell line(s) inducible with glucocorticoids, insulin, or cAMP derivatives.</p>
158	HSUBW09	457	Regulation of transcription through the FAS promoter	<p>Assays for the regulation of transcription through the FAS promoter element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the FAS promoter element in a reporter construct and to regulate transcription of FAS, a key enzyme for lipogenesis. FAS promoter is</p>

158	HSUBW09	457	element in hepatocytes	<p>regulated by many transcription factors including SREBP. Insulin increases FAS gene transcription in livers of diabetic mice. This stimulation of transcription is also somewhat glucose dependent. Exemplary assays that may be used or routinely modified to test for FAS promoter element activity (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Xiong, S., et al., <i>Proc Natl Acad Sci U.S.A.</i>, 97(8):3948-53 (2000); Roder, K., et al., <i>Eur J Biochem</i>, 260(3):743-51 (1999); Oskouian B, et al., <i>Biochem J</i>, 317 (Pt 1):257-65 (1996); Berger, et al., <i>Gene</i> 66:1-10 (1988); and, Cullen, B., et al., <i>Methods in Enzymol</i> 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays, such as H4IIE cells, are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays include rat liver hepatoma cell line(s) inducible with glucocorticoids, insulin, or cAMP derivatives.</p> <p>CD152 FMA.T. CD152 (a.k.a. CTLA-4) expression is restricted to activated T cells. CD152 is a negative regulator of T cell proliferation. Reduced CD152 expression has been linked to hyperproliferative and autoimmune diseases. Overexpression of CD152 may lead to impaired immunoresponses. Assays for immunomodulatory proteins important in the maintenance of T cell homeostasis and expressed almost exclusively on CD4+ and CD8+ T cells are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to modulate the activation of T cells, maintain T cell homeostasis, and/or mediate humoral or cell-mediated immunity. Exemplary assays that test for immunomodulatory proteins evaluate the upregulation of cell surface markers, such as CD152, and the activation of T cells. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include, for example, the assays disclosed in Miraglia et al., <i>J Biomolecular Screening</i> 4:193-204 (1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); McCoy et al., <i>Immunol Cell Biol</i> 77(1):1-10 (1999); Oostervegal et al., <i>Curr Opin Immunol</i> 11(3):294-300 (1999); and Saito T, <i>Curr Opin Immunol</i> 10(3):313-321 (1998), the contents of each of which are herein incorporated by reference in its entirety. Human T cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human T cells are primary. These cells mediate humoral or cell-mediated immunity and may be preactivated to enhance responsiveness to immunomodulatory factors.</p> <p>Assays for the activation of transcription through the cAMP response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including</p>
159	HSVBU91	458	Activation of transcription	

159	HSVBU91	458	through cAMP response element (CRE) in pre-adipocytes.	<p>antibodies and agonists or antagonists of the invention) to increase cAMP, regulate CREB transcription factors, and modulate expression of genes involved in a wide variety of cell functions. For example, a 3T3-L1/CRE reporter assay may be used to identify factors that activate the cAMP signaling pathway. CREB plays a major role in adipogenesis, and is involved in differentiation into adipocytes. CRE contains the binding sequence for the transcription factor CREB (CRE binding protein). Exemplary assays for transcription through the cAMP response element that may be used or routinely modified to test cAMP-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Reusch et al., Mol Cell Biol 20(3): 1008-1020 (2000); and Klemm et al., J Biol Chem 273:917-923 (1998), the contents of each of which are herein incorporated by reference in its entirety. Pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.</p>
159	HSVBU91	458	Activation of Hepatocyte ERK Signaling Pathway	<p>Kinase assay. Kinase assays, for example an Elk-1 kinase assay, for ERK signal transduction that regulate cell proliferation or differentiation are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote or inhibit cell proliferation, activation, and differentiation. Exemplary assays for ERK kinase activity that may be used or routinely modified to test ERK kinase-induced activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Forrer et al., Biol Chem 379(8-9):1101-1110 (1998); Kyriakis JM, Biochem Soc Symp 64:29-48 (1999); Chang and Karin, Nature 410(6824):37-40 (2001); and Cobb MH, Prog Biophys Mol Biol 71(3-4):479-500 (1999); the contents of each of which are herein incorporated by reference in its entirety. Rat liver hepatoma cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary rat liver hepatoma cells that may be used according to these assays include H4Ile cells, which are known to respond to glucocorticoids, insulin, or cAMP derivatives.</p>
159	HSVBU91	458	Insulin Secretion	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and downregulation is a key component in diabetes.</p>

159	HSVBU91	458	<p>Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., <i>Endocr J</i>, 47(3):261-9 (2000); Salapatek, A.M., et al., <i>Mol Endocrinol</i>, 13(8):1305-17 (1999); Filipsson, K., et al., <i>Ann N Y Acad Sci</i>, 865:441-4 (1998); Olson, L.K., et al., <i>J Biol Chem</i>, 271(28):16544-52 (1996); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J</i> 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p> <p>Assays for the activation of transcription through the CD28 response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate IL-2 expression in T cells.</p> <p>Exemplary assays for transcription through the CD28 response element that may be used or routinely modified to test CD28-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); McGuire and Iacobelli, <i>J Immunol</i> 159(3):1319-1327 (1997); Parra et al., <i>J Immunol</i> 166(4):2437-2443 (2001); and Butscher et al., <i>J Biol Chem</i> 3(1):552-560 (1998), the contents of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary human T cells that may be used according to these assays include the JURKAT cell line, which is a suspension culture of leukemia cells that produce IL-2 when stimulated.</p>
160	HTAEE28	459	<p>Caspase Apoptosis Rescue. Assays for caspase apoptosis rescue are well known in the art and may be used or routinely modified to assess the ability of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to inhibit caspase protease-mediated apoptosis. Exemplary assays for caspase apoptosis that may be used or routinely modified to test caspase apoptosis rescue of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Romeo et al., <i>Cardiovasc Res</i> 45(3): 788-794 (2000); Messmer et al., <i>Br J Pharmacol</i> 127(7): 1633-1640 (1999); and <i>J Atheroscler Thromb</i> 3(2): 75-80 (1996); the contents of each of which are herein incorporated by reference in its entirety. Endothelial cells that may be used</p>

				<p>according to these assays are publicly available (e.g., through commercial sources). Exemplary endothelial cells that may be used according to these assays include bovine aortic endothelial cells (bAEC), which are an example of endothelial cells which line blood vessels and are involved in functions that include, but are not limited to, angiogenesis, vascular permeability, vascular tone, and immune cell extravasation.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., <i>Endocr J</i>, 47(3):261-9 (2000); Salapatek, A.M., et al., <i>Mol Endocrinol</i>, 13(8):1305-17 (1999); Filipsson, K., et al., <i>Ann N Y Acad Sci</i>, 865:441-4 (1998); Olson, L.K., et al., <i>J Biol Chem</i>, 271(28):16544-52 (1996); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J</i> 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p> <p>Assays for the regulation of viability and proliferation of cells in vitro are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate viability and proliferation of pancreatic beta cells. For example, the Cell Titer-Glo luminescent cell viability assay measures the number of viable cells in culture based on quantitation of the ATP present which signals the presence of metabolically active cells. Exemplary assays that may be used or routinely modified to test regulation of viability and proliferation of pancreatic beta cells by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Friedrichsen BN, et al., <i>Mol Endocrinol</i>, 15(1):136-48 (2001); Huotari MA, et al., <i>Endocrinology</i>, 139(4):1494-9 (1998); Hugl SR, et al., <i>J Biol Chem</i> 1998 Jul 10;273(28):17771-9 (1998), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly</p>
160	HTAEE28	459	Insulin Secretion	
161	HTECC05	460	Regulation of viability and proliferation of pancreatic beta cells.	

162	HTEEB42	461	Regulation of transcription of Malic Enzyme in hepatocytes	<p>available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion.</p> <p>References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and MEd identified as putative PPAR response elements. ME promoter may also respond to AP1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeper, R.S., et al., <i>Mol Endocrinol</i>, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., <i>Mol Endocrinol</i>, 8(10):1361-9 (1994); Barroso, I., et al., <i>J Biol Chem</i>, 274(25):17997-8004 (1999); Ijpenberg, A., et al., <i>J Biol Chem</i>, 272(32):20108-20117 (1997); Berger, et al., <i>Gene</i> 66:1-10 (1988); and, Cullen, B., et al., <i>Methods in Enzymol.</i> 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays includes the mouse 3T3-L1 cell line. 3T3-L1 is a mouse preadipocyte cell line (adherent). It is a continuous substrain of 3T3 fibroblasts developed through clonal isolation. Cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p>
163	HTEFU65	462	Activation of transcription through cAMP response element (CRE) in pre-adipocytes.	<p>Assays for the activation of transcription through the cAMP response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to increase cAMP, regulate CREB transcription factors, and modulate expression of genes involved in a wide variety of cell functions. For example, a 3T3-L1/CRE reporter assay may be used to identify factors that activate the cAMP signaling pathway. CREB plays a major role in adipogenesis, and is involved in differentiation into adipocytes. CRE contains the binding sequence for the transcription factor CREB (CRE binding protein). Exemplary assays for transcription through the cAMP response element that may be used or routinely modified to test cAMP-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-</p>

163	HTEFU65	462	Regulation of transcription of Malic Enzyme in hepatocytes	<p>6346 (1988); Reusch et al., <i>Mol Cell Biol</i> 20(3):1008-1020 (2000); and Klemm et al., <i>J Biol Chem</i> 273:917-923 (1998), the contents of each of which are herein incorporated by reference in its entirety. Pre-adipocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary mouse adipocyte cells that may be used according to these assays include 3T3-L1 cells. 3T3-L1 is an adherent mouse preadipocyte cell line that is a continuous substrain of 3T3 fibroblast cells developed through clonal isolation and undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation conditions known in the art.</p> <p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements ME_p and ME_d identified as putative PPAR response elements. ME promoter may also respond to AP1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeper, R.S., et al., <i>Mol Endocrinol</i>, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., <i>Mol Endocrinol</i>, 8(10):1361-9 (1994); Barroso, I., et al., <i>J Biol Chem</i>, 274(25):17997-8004 (1999); Ijpenberg, A., et al., <i>J Biol Chem</i>, 272(32):20108-20117 (1997); Berger, et al., <i>Gene</i> 66:1-10 (1988); and, Cullen, B., et al., <i>Methods in Enzymol.</i> 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays includes the mouse 3T3-L1 cell line. 3T3-L1 is a mouse preadipocyte cell line (adherent). It is a continuous substrain of 3T3 fibroblasts developed through clonal isolation. Cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p>
163	HTEFU65	462	Myoblast cell proliferation	<p>Assays for muscle cell proliferation are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate or inhibit myoblast cell proliferation. Exemplary assays for myoblast cell proliferation that may be used or routinely modified to test activity of polypeptides and antibodies of the invention (including agonists or antagonists of the invention) include, for example, assays disclosed in: Soeta, C., et al. "Possible role for the c-ski gene in the proliferation of myogenic cells in regenerating skeletal muscles of rats" <i>Dev Growth Differ</i> Apr;43(2):155-64 (2001); Ewton DZ, et al., "IGF binding proteins-4, -5 and -6 may play specialized roles during L6 myoblast proliferation and differentiation" <i>J Endocrinol Mar;144(3):539-53</i> (1995); and, Pampusch MS, et al., "Effect of transforming growth factor</p>

163	HTEFU65	462	Production of IFN γ using a T cells	<p>beta on proliferation of L6 and embryonic porcine myogenic cells" J Cell Physiol Jun;143(3):524-8 (1990); the contents of each of which are herein incorporated by reference in their entirety. Exemplary myoblast cells that may be used according to these assays include the rat myoblast L6 cell line. Rat myoblast L6 cells are an adherent rat myoblast cell line, isolated from primary cultures of rat thigh muscle, that fuse to form multinucleated myotubes and striated fibers after culture in differentiation media.</p> <p>IFNγ plays a central role in the immune system and is considered to be a proinflammatory cytokine. IFNγ promotes TH1 and inhibits TH2 differentiation; promotes IgG2a and inhibits IgE secretion; induces macrophage activation; and increases MHC expression. Assays for immunomodulatory proteins produced by T cells and NK cells that regulate a variety of inflammatory activities and inhibit TH2 helper cell functions are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mediate immunomodulation, regulate inflammatory activities, modulate TH2 helper cell function, and/or mediate humoral or cell-mediated immunity. Exemplary assays that test for immunomodulatory proteins evaluate the production of cytokines, such as Interferon gamma (IFNγ), and the activation of T cells. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204 (1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); Gonzalez et al., J Clin Lab Anal 8(5):225-233 (1995); Billiau et al., Ann NY Acad Sci 856:22-32 (1998); Boehm et al., Annu Rev Immunol 15:749-795 (1997), and Rheumatology (Oxford) 38(3):214-20 (1999), the contents of each of which are herein incorporated by reference in its entirety. Human T cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human T cells are primary human lymphocytes that mature in the thymus and express a T Cell receptor and CD3, CD4, or CD8. These cells mediate humoral or cell-mediated immunity and may be preactivated to enhance responsiveness to immunomodulatory factors.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li,</p>
163	HTEFU65	462	Stimulation of insulin secretion from pancreatic beta cells.	

164	HTELP17	463	Regulation of transcription through the PEPCK promoter in hepatocytes	<p>M., et al., Endocrinology, 138(9):3735-40 (1997); Kim, K.H., et al., FEBS Lett, 377(2):237-9 (1995); and, Miraglia S et al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. Endocrinology 1992 130:167.</p> <p>Assays for the regulation of transcription through the PEPCK promoter are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the PEPCK promoter in a reporter construct and regulate liver gluconeogenesis. Exemplary assays for regulation of transcription through the PEPCK promoter that may be used or routinely modified to test for PEPCK promoter activity (in hepatocytes) of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Lochhead et al., Diabetes 49(6):896-903 (2000); and Yeagley et al., J Biol Chem 275(23):17814-17820 (2000), the contents of each of which is herein incorporated by reference in its entirety. Hepatocyte cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary liver hepatoma cells that may be used according to these assays include H4Ile cells, which contain a tyrosine amino transferase that is inducible with glucocorticoids, insulin, or cAMP derivatives.</p>
164	HTELP17	463	Stimulation of Calcium Flux in pancreatic beta cells.	<p>Assays for measuring calcium flux are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mobilize calcium. For example, the FLPR assay may be used to measure influx of calcium. Cells normally have very low concentrations of cytosolic calcium compared to much higher extracellular calcium. Extracellular factors can cause an influx of calcium, leading to activation of calcium responsive signaling pathways and alterations in cell functions. Exemplary assays that may be used or routinely modified to measure calcium flux by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Satin LS, et al., Endocrinology, 136(10):4589-601 (1995); Mogami H, et al., Endocrinology, 136(7):2960-6 (1995); Richardson SB, et al., Biochem J, 288 (Pt 3):847-51 (1992); and, Meats, JE, et al., Cell Calcium 1989 Nov-Dec;10(8):535-41 (1989), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely</p>

165	HTELS08	464	Regulation of transcription through the PEPCK promoter in hepatocytes	<p>generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p> <p>Assays for the regulation of transcription through the PEPCK promoter are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the PEPCK promoter in a reporter construct and regulate liver gluconeogenesis. Exemplary assays for regulation of transcription through the PEPCK promoter that may be used or routinely modified to test for PEPCK promoter activity (in hepatocytes) of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., Gene 66:1-10 (1998); Cullen and Malm, Methods in Enzymol 216:362-368 (1992); Henthorn et al., Proc Natl Acad Sci USA 85:6342-6346 (1988); Lochhead et al., Diabetes 49(6):896-903 (2000); and Yeagley et al., J Biol Chem 275(23):17814-17820 (2000), the contents of each of which is herein incorporated by reference in its entirety. Hepatocyte cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary liver hepatoma cells that may be used according to these assays include H4Ile cells, which contain a tyrosine amino transferase that is inducible with glucocorticoids, insulin, or cAMP derivatives.</p>
166	HTLEP53	465	Endothelial Cell Apoptosis	<p>Caspase Apoptosis. Assays for caspase apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote caspase protease-mediated apoptosis. Induction of apoptosis in endothelial cells supporting the vasculature of tumors is associated with tumor regression due to loss of tumor blood supply. Exemplary assays for caspase apoptosis that may be used or routinely modified to test caspase apoptosis activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in Lee et al., FEBS Lett 485(2-3): 122-126 (2000); Nor et al., J Vasc Res 37(3): 209-218 (2000); and Karsan and Harlan, J Atheroscler Thromb 3(2): 75-80 (1996); the contents of each of which are herein incorporated by reference in its entirety.</p> <p>Endothelial cells that may be used according to these assays are publicly available (e.g., through commercial sources). Exemplary endothelial cells that may be used according to these assays include bovine aortic endothelial cells (bAEC), which are an example of endothelial cells which line blood vessels and are involved in functions that include, but are not limited to, angiogenesis, vascular permeability, vascular tone, and immune cell extravasation.</p>

166	HTLEP53	465	Insulin Secretion	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., <i>Endocr J</i>, 47(3):261-9 (2000); Salapatek, A.M., et al., <i>Mol Endocrinol</i>, 13(8):1305-17 (1999); Filipsson, K., et al., <i>Ann N Y Acad Sci</i>, 865:441-4 (1998); Olson, L.K., et al., <i>J Biol Chem</i>, 271(28):16544-52 (1996); and, Miraglia S et. al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATCC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J</i>. 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p>
167	HTPCS72	466	Stimulation of Calcium Flux in pancreatic beta cells.	<p>Assays for measuring calcium flux are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to mobilize calcium. For example, the FLPR assay may be used to measure influx of calcium. Cells normally have very low concentrations of cytosolic calcium compared to much higher extracellular calcium. Extracellular factors can cause an influx of calcium, leading to activation of calcium responsive signaling pathways and alterations in cell functions. Exemplary assays that may be used or routinely modified to measure calcium flux by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Satin LS, et al., <i>Endocrinology</i>, 136(10):4589-601 (1995); Mogami H, et al., <i>Endocrinology</i>, 136(7):2960-6 (1995); Richardson SB, et al., <i>Biochem J</i>, 288 (Pt 3):847-51 (1992); and, Meats, JE, et al., <i>Cell Calcium</i> 1989 Nov-Dec;10(8):535-41 (1989), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids.</p>

168	HTPE83	467	Insulin Secretion	<p>ATTC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., Endocr J, 47(3):261-9 (2000); Salapatek, A.M., et al., Mol Endocrinol, 13(8):1305-17 (1999); Filipsson, K., et al., Ann N Y Acad Sci, 865:441-4 (1998); Olson, L.K., et al., J Biol Chem, 271(28):16544-52 (1996); and, Miraglia S et. al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. Biochem. J. 219: 547-551; Santerre et al. Proc. Natl. Acad. Sci. USA 78: 4339-4343, 1981.</p>
169	HTSEW17	468	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., Am J Physiol, 277(4 Pt 2):R959-66 (1999); Li, M., et al., Endocrinology, 138(9):3735-40 (1997); Kim, K.H., et al., FEBS Lett, 377(2):237-9 (1995); and, Miraglia S et. al., Journal of Biomolecular Screening, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable</p>

169	HTSEW17	468	Activation of transcription through NFκB response element in immune cells (such as B-cells).	<p>insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p> <p>Assays for the activation of transcription through the NFκB response element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate NFκB transcription factors and modulate expression of immunomodulatory genes. Exemplary assays for transcription through the NFκB response element that may be used or routinely modified to test NFκB-response element activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Gri G, et al., <i>Biol Chem</i>, 273(11):6431-6438 (1998); Pyatt DW, et al., <i>Cell Biol Toxicol</i> 2000;16(1):41-51 (2000); Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); Valle Blazquez et al., <i>Immunology</i> 90(3):455-460 (1997); Aramburau et al., <i>J Exp Med</i> 82(3):801-810 (1995); and Fraser et al., 29(3):838-844 (1999), the contents of each of which are herein incorporated by reference in its entirety. Immune cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary immune cells that may be used according to these assays include the Reh B-cell line.</p>
170	HTTB176	469	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p>
170	HTTB176	469	Upregulation of CD69 and	<p>CD69 FMAT. CD69 is an activation marker that is expressed on activated T cells, B cells, and NK cells. CD69 is not expressed on resting T cells, B cells, or NK cells. CD69 has been found to be associated with</p>

171	HTTBS64	470	activation of T cells	<p>inflammation. Assays for immunomodulatory proteins expressed in T cells, B cells, and leukocytes are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to modulate the activation of T cells, and/or mediate humoral or cell-mediated immunity. Exemplary assays that test for immunomodulatory proteins evaluate the upregulation of cell surface markers, such as CD69, and the activation of T cells. Such assays that may be used or routinely modified to test immunomodulatory activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include, for example, the assays disclosed in Miraglia et al., J Biomolecular Screening 4:193-204 (1999); Rowland et al., "Lymphocytes: a practical approach" Chapter 6:138-160 (2000); Ferenczi et al., J Autoimmun 14(1):63-78 (2000); Werfel et al., Allergy 52(4):465-469 (1997); Taylor-Fishwick and Siegel, Eur J Immunol 25(12):3215-3221 (1995); and Afetra et al., Ann Rheum Dis 52(6):457-460 (1993), the contents of each of which are herein incorporated by reference in its entirety. Human T cells that may be used according to these assays may be isolated using techniques disclosed herein or otherwise known in the art. Human T cells are primary human lymphocytes that mature in the thymus and express a T Cell receptor and CD3, CD4, or CD8. These cells mediate humoral or cell-mediated immunity and may be preactivated to enhance responsiveness to immunomodulatory factors.</p>
			Regulation of transcription of Malic Enzyme in hepatocytes	<p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and MED identified as putative PPAR response elements. ME promoter may also respond to AP1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeper, R.S., et al., Mol Endocrinol, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., Mol Endocrinol, 8(10):1361-9 (1994); Barroso, I., et al., J Biol Chem, 274(25):17997-8004 (1999); Ijpenberg, A., et al., J Biol Chem, 272(32):20108-20117 (1997); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays includes the mouse 3T3-L1 cell line. 3T3-L1 is a mouse preadipocyte cell line (adherent). It is a continuous substrain of 3T3 fibroblasts developed through clonal isolation. Cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p>

172	HTXJM03	471	Regulation of transcription of Malic Enzyme in hepatocytes	<p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and MED identified as putative PPAR response elements. ME promoter may also respond to AP1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeter, R.S., et al., <i>Mol Endocrinol</i>, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., <i>Mol Endocrinol</i>, 8(10):1361-9 (1994); Barroso, I., et al., <i>J Biol Chem</i>, 274(25):17997-8004 (1999); Ijpenberg, A., et al., <i>J Biol Chem</i>, 272(32):20108-20117 (1997); Berger, et al., <i>Gene</i> 66:1-10 (1988); and, Cullen, B., et al., <i>Methods in Enzymol.</i> 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays includes the mouse 3T3-L1 cell line. 3T3-L1 is a mouse preadipocyte cell line (adherent). It is a continuous substrain of 3T3 fibroblasts developed through clonal isolation. Cells undergo a pre-adipocyte to adipose-like conversion under appropriate differentiation culture conditions.</p>
173	HTXON32	472	Insulin Secretion	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and downregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Shimizu, H., et al., <i>Endocr J</i>, 47(3):261-9 (2000); Salapatek, A.M., et al., <i>Mol Endocrinol</i>, 13(8):1305-17 (1999); Filipsson, K., et al., <i>Ann N Y Acad Sci</i>, 865:441-4 (1998); Olson, L.K., et al., <i>J Biol Chem</i>, 271(28):16544-52 (1996); and, Miraglia S et. al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include HIT15 Cells. HIT15 are an adherent epithelial cell line established from Syrian hamster islet cells transformed with SV40. These cells express glucagon, somatostatin, and glucocorticoid receptors. The cells secrete insulin, which is stimulated by glucose and</p>

174	HUFC130	473	Stimulation of insulin secretion from pancreatic beta cells.	<p>glucagon and suppressed by somatostatin or glucocorticoids. ATTC# CRL-1777 Refs: Lord and Ashcroft. <i>Biochem. J.</i> 219: 547-551; Santerre et al. <i>Proc. Natl. Acad. Sci. USA</i> 78: 4339-4343, 1981.</p> <p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and dysregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett.</i> 377(2):237-9 (1995); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p>
175	HUVEB53	474	Regulation of apoptosis in pancreatic beta cells.	<p>Caspase Apoptosis. Assays for caspase apoptosis are well known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to promote caspase protease-mediated apoptosis. Apoptosis in pancreatic beta is associated with induction and progression of diabetes. Exemplary assays for caspase apoptosis that may be used or routinely modified to test caspase apoptosis activity of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include the assays disclosed in: Loweth, A.C, et al., <i>FEBS Lett.</i> 400(3):285-8 (1997); Saini, K.S, et al., <i>Biochem Mol Biol Int</i>, 39(6):1229-36 (1996); Krautheim, A., et al., <i>Br J Pharmacol</i>, 129(4):687-94 (2000); Chandra J, et al., <i>Diabetes</i>, 50 Suppl 1:S44-7 (2001); Suk K, et al., <i>J Immunol</i>, 166(7):4481-9 (2001); Tejedo J, et al., <i>FEBS Lett.</i> 459(2):238-43 (1999); Zhang, S., et al., <i>FEBS Lett.</i> 455(3):315-20 (1999); Lee et al., <i>FEBS Lett</i> 485(2-3): 122-126 (2000); Nor et al., <i>J Vasc Res</i> 37(3): 209-218 (2000); and Karsan and Harlan, <i>J Atheroscler Thromb</i> 3(2): 75-80 (1996); the contents of each of which are herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include RIN-m. RIN-m is a rat adherent pancreatic beta cell insulinoma cell line derived from a radiation induced transplantable rat islet cell tumor. The cells</p>

176	HWAAD63	475	Regulation of transcription through the FAS promoter element in hepatocytes	<p>produce and secrete islet polypeptide hormones, and produce insulin, somatostatin, and possibly glucagon. ATTC: #CRL-2057 Chick et al. Proc. Natl. Acad. Sci. 1977 74:628; AF et al. Proc. Natl. Acad. Sci. 1980 77:3519.</p> <p>Assays for the regulation of transcription through the FAS promoter element are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to activate the FAS promoter element in a reporter construct and to regulate transcription of FAS, a key enzyme for lipogenesis. FAS promoter is regulated by many transcription factors including SREBP. Insulin increases FAS gene transcription in livers of diabetic mice. This stimulation of transcription is also somewhat glucose dependent. Exemplary assays that may be used or routinely modified to test for FAS promoter element activity (in hepatocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Xiong, S., et al., Proc Natl Acad Sci U.S.A., 97(8):3948-53 (2000); Roder, K., et al., Eur J Biochem, 260(3):743-51 (1999); Oskouian B, et al., Biochem J, 317 (Pt 1):257-65 (1996); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays, such as H4IIE cells, are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays include rat liver hepatoma cell line(s) inducible with glucocorticoids, insulin, or cAMP derivatives.</p>
176	HWAAD63	475	Production of VCAM in endothelial cells (such as human umbilical vein endothelial cells (HUVEC))	<p>Assays for measuring expression of VCAM are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate VCAM expression. For example, FMAT may be used to measure the upregulation of cell surface VCAM-1 expression in endothelial cells. Endothelial cells are cells that line blood vessels, and are involved in functions that include, but are not limited to, angiogenesis, vascular permeability, vascular tone, and immune cell extravasation. Exemplary endothelial cells that may be used according to these assays include human umbilical vein endothelial cells (HUVEC), which are available from commercial sources. The expression of VCAM (CD106), a membrane-associated protein, can be upregulated by cytokines or other factors, and contributes to the extravasation of lymphocytes, leucocytes and other immune cells from blood vessels; thus VCAM expression plays a role in promoting immune and inflammatory responses.</p>
176	HWAAD63	475	Production of ICAM-1	<p>Assays for measuring expression of ICAM-1 are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate ICAM-1 expression. Exemplary assays that may be used or routinely modified to measure ICAM-1 expression include assays disclosed in: Takacs P, et al, FASEB J,</p>

177	HWADJ89	476	Activation of transcription through serum response element in immune cells (such as T-cells).	<p>15(2):279-281 (2001); and, Miyamoto K, et al., <i>Am J Pathol</i>, 156(5):1733-1739 (2000), the contents of each of which is herein incorporated by reference in its entirety. Cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary cells that may be used according to these assays include microvascular endothelial cells (MVEC).</p> <p>Assays for the activation of transcription through the Serum Response Element (SRE) are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate the serum response factors and modulate the expression of genes involved in growth. Exemplary assays for transcription through the SRE that may be used or routinely modified to test SRE activity of the polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in Berger et al., <i>Gene</i> 66:1-10 (1998); Cullen and Malm, <i>Methods in Enzymol</i> 216:362-368 (1992); Henthorn et al., <i>Proc Natl Acad Sci USA</i> 85:6342-6346 (1988); and Black et al., <i>Virus Genes</i> 12(2):105-117 (1997), the content of each of which are herein incorporated by reference in its entirety. T cells that may be used according to these assays are publicly available (e.g., through the ATCC). Exemplary mouse T cells that may be used according to these assays include the CTLL cell line, which is an IL-2 dependent suspension culture of T cells with cytotoxic activity.</p>
177	HWADJ89	476	Stimulation of insulin secretion from pancreatic beta cells.	<p>Assays for measuring secretion of insulin are well-known in the art and may be used or routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to stimulate insulin secretion. For example, insulin secretion is measured by FMAT using anti-rat insulin antibodies. Insulin secretion from pancreatic beta cells is upregulated by glucose and also by certain proteins/peptides, and downregulation is a key component in diabetes. Exemplary assays that may be used or routinely modified to test for stimulation of insulin secretion (from pancreatic cells) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Ahren, B., et al., <i>Am J Physiol</i>, 277(4 Pt 2):R959-66 (1999); Li, M., et al., <i>Endocrinology</i>, 138(9):3735-40 (1997); Kim, K.H., et al., <i>FEBS Lett</i>, 377(2):237-9 (1995); and, Miraglia S et al., <i>Journal of Biomolecular Screening</i>, 4:193-204 (1999), the contents of each of which is herein incorporated by reference in its entirety. Pancreatic cells that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary pancreatic cells that may be used according to these assays include rat INS-1 cells. INS-1 cells are a semi-adherent cell line established from cells isolated from an X-ray induced rat transplantable insulinoma. These cells retain characteristics typical of native pancreatic beta cells including glucose inducible insulin secretion. References: Asfari et al. <i>Endocrinology</i> 1992 130:167.</p>
178	HWBFX31	477	Regulation of	<p>Assays for the regulation of transcription of Malic Enzyme are well-known in the art and may be used or</p>

			transcription of Malic Enzyme in adipocytes	<p>routinely modified to assess the ability of polypeptides of the invention (including antibodies and agonists or antagonists of the invention) to regulate transcription of Malic Enzyme, a key enzyme in lipogenesis. Malic enzyme is involved in lipogenesis and its expression is stimulated by insulin. ME promoter contains two direct repeat (DR1)-like elements MEp and MED identified as putative PPAR response elements. ME promoter may also respond to AP1 and other transcription factors. Exemplary assays that may be used or routinely modified to test for regulation of transcription of Malic Enzyme (in adipocytes) by polypeptides of the invention (including antibodies and agonists or antagonists of the invention) include assays disclosed in: Streeter, R.S., et al., Mol Endocrinol, 12(11):1778-91 (1998); Garcia-Jimenez, C., et al., Mol Endocrinol, 8(10):1361-9 (1994); Barroso, I., et al., J Biol Chem, 274(25):17997-8004 (1999); Ijpenberg, A., et al., J Biol Chem, 272(32):20108-20117 (1997); Berger, et al., Gene 66:1-10 (1988); and, Cullen, B., et al., Methods in Enzymol. 216:362-368 (1992), the contents of each of which is herein incorporated by reference in its entirety. Hepatocytes that may be used according to these assays are publicly available (e.g., through the ATCC) and/or may be routinely generated. Exemplary hepatocytes that may be used according to these assays includes the H4IIE rat liver hepatoma cell line.</p>
--	--	--	---	--

Table 2 further characterizes certain encoded polypeptides of the invention, by providing the results of comparisons to protein and protein family databases. The first column provides a unique clone identifier, "Clone ID NO:", corresponding to a cDNA clone disclosed in Table 1A and/or Table 1B. The second column provides the unique contig identifier, "Contig ID:" which allows correlation with the information in Table 1B. The third column provides the sequence identifier, "SEQ ID NO:", for the contig polynucleotide sequences. The fourth column provides the analysis method by which the homology/identity disclosed in the Table was determined. The fifth column provides a description of the PFAM/NR hit identified by each analysis. Column six provides the accession number of the PFAM/NR hit disclosed in the fifth column. Column seven, score/percent identity, provides a quality score or the percent identity, of the hit disclosed in column five. Comparisons were made between polypeptides encoded by polynucleotides of the invention and a non-redundant protein database (herein referred to as "NR"), or a database of protein families (herein referred to as "PFAM"), as described below.

The NR database, which comprises the NBRF PIR database, the NCBI GenPept database, and the SIB SwissProt and TrEMBL databases, was made non-redundant using the computer program nrdb2 (Warren Gish, Washington University in Saint Louis). Each of the polynucleotides shown in Table 1B, column 3 (e.g., SEQ ID NO:X or the 'Query' sequence) was used to search against the NR database. The computer program BLASTX was used to compare a 6-frame translation of the Query sequence to the NR database (for information about the BLASTX algorithm please see Altshul et al., J. Mol. Biol. 215:403-410 (1990), and Gish and States, Nat. Genet. 3:266-272 (1993). A description of the sequence that is most similar to the Query sequence (the highest scoring 'Subject') is shown in column five of Table 2 and the database accession number for that sequence is provided in column six. The highest scoring 'Subject' is reported in Table 2 if (a) the estimated probability that the match occurred by chance alone is less than 1.0×10^{-7} , and (b) the match was not to a known repetitive element. BLASTX returns alignments of short polypeptide segments of the Query and Subject sequences which share a high degree of similarity; these segments are known as High-Scoring Segment Pairs or HSPs. Table 2 reports the degree of similarity between the Query and the Subject for each HSP as a percent identity in Column 7. The percent identity is determined by dividing the number of exact matches between the two aligned sequences in the HSP, dividing by the number of Query amino acids in the HSP and multiplying by 100. The polynucleotides of SEQ ID NO:X which encode the polypeptide sequence that generates an HSP are delineated by columns 8 and 9 of Table 2.

The PFAM database, PFAM version 2.1, (Sonnhammer, Nucl. Acids Res., 26:320-322, 1998)) consists of a series of multiple sequence alignments; one alignment for each protein family. Each multiple sequence alignment is converted into a probability model called a Hidden Markov

Model, or HMM, that represents the position-specific variation among the sequences that make up the multiple sequence alignment (see, e.g., Durbin, et al., *Biological sequence analysis: probabilistic models of proteins and nucleic acids*, Cambridge University Press, 1998 for the theory of HMMs). The program HMMER version 1.8 (Sean Eddy, Washington University in Saint Louis) was used to compare the predicted protein sequence for each Query sequence (SEQ ID NO:Y in Table 1B.1) to each of the HMMs derived from PFAM version 2.1. A HMM derived from PFAM version 2.1 was said to be a significant match to a polypeptide of the invention if the score returned by HMMER 1.8 was greater than 0.8 times the HMMER 1.8 score obtained with the most distantly related known member of that protein family. The description of the PFAM family which shares a significant match with a polypeptide of the invention is listed in column 5 of Table 2, and the database accession number of the PFAM hit is provided in column 6. Column 7 provides the score returned by HMMER version 1.8 for the alignment. Columns 8 and 9 delineate the polynucleotides of SEQ ID NO:X which encode the polypeptide sequence which show a significant match to a PFAM protein family.

As mentioned, columns 8 and 9 in Table 2, "NT From" and "NT To", delineate the polynucleotides of "SEQ ID NO:X" that encode a polypeptide having a significant match to the PFAM/NR database as disclosed in the fifth column. In one embodiment, the invention provides a protein comprising, or alternatively consisting of, a polypeptide encoded by the polynucleotides of SEQ ID NO:X delineated in columns 8 and 9 of Table 2. Also provided are polynucleotides encoding such proteins, and the complementary strand thereto.

The nucleotide sequence SEQ ID NO:X and the translated SEQ ID NO:Y are sufficiently accurate and otherwise suitable for a variety of uses well known in the art and described further below. For instance, the nucleotide sequences of SEQ ID NO:X are useful for designing nucleic acid hybridization probes that will detect nucleic acid sequences contained in SEQ ID NO:X or the cDNA contained in ATCC Deposit No:Z. These probes will also hybridize to nucleic acid molecules in biological samples, thereby enabling immediate applications in chromosome mapping, linkage analysis, tissue identification and/or typing, and a variety of forensic and diagnostic methods of the invention. Similarly, polypeptides identified from SEQ ID NO:Y may be used to generate antibodies which bind specifically to these polypeptides, or fragments thereof, and/or to the polypeptides encoded by the cDNA clones identified in, for example, Table 1A and/or 1B.

Nevertheless, DNA sequences generated by sequencing reactions can contain sequencing errors. The errors exist as misidentified nucleotides, or as insertions or deletions of nucleotides in the generated DNA sequence. The erroneously inserted or deleted nucleotides cause frame shifts in the reading frames of the predicted amino acid sequence. In these cases, the predicted amino acid sequence diverges from the actual amino acid sequence, even though the generated DNA

sequence may be greater than 99.9% identical to the actual DNA sequence (for example, one base insertion or deletion in an open reading frame of over 1000 bases).

Accordingly, for those applications requiring precision in the nucleotide sequence or the amino acid sequence, the present invention provides not only the generated nucleotide sequence identified as SEQ ID NO:X, and a predicted translated amino acid sequence identified as SEQ ID NO:Y, but also a sample of plasmid DNA containing cDNA ATCC Deposit No:Z (e.g., as set forth in columns 2 and 3 of Table 1A and/or as set forth, for example, in Table 1B, 6, and 7). The nucleotide sequence of each deposited clone can readily be determined by sequencing the deposited clone in accordance with known methods. Further, techniques known in the art can be used to verify the nucleotide sequences of SEQ ID NO:X. The predicted amino acid sequence can then be verified from such deposits. Moreover, the amino acid sequence of the protein encoded by a particular clone can also be directly determined by peptide sequencing or by expressing the protein in a suitable host cell containing the deposited human cDNA, collecting the protein, and determining its sequence.

15

Table 2

cDNA Clone ID	Contig ID:	SE Q ID NO: X	Analysis Method	PFam/NR Description	PFam/NR Accession Number	Score/ Percent Identity	NT From	NT To
H2CBU83	884134	11	WUblastx. 64	(Q9NYD1) G-PROTEIN-COUPLED RECEPTOR 48.	Q9NYD1	100%	10	777
HACBD91	637482	13	WUblastx. 64	NADH dehydrogenase (ubiquinone) (EC 1.6.5.3) chain NDUFB4 - human	pirJE0383J E0383	100% 95%	211 1306	357 1368
HAGA26	561996	14	WUblastx. 64	(Q9UKG4) NA+/SULFATE COTRANSPORTER SUT-1.	Q9UKG4	99% 93%	414 2	1001 433
HAPAN23	872551	191	HMMER 2.1.1	PFAM: Carboxyl transferase domain	PF01039	126.6	294	617
			WUblastx. 64	(Q9HCC0) NON-BIOTIN CONTAINING SUBUNIT OF 3- METHYLCROTONYL-COA CARBOX	Q9HCC0	91% 93%	120 557	665 1807
HBJBR69	638516	17	WUblastx. 64	(Q9JIG5) UBIQUITIN SPECIFIC PROTEASE (FRAGMENT).	Q9JIG5	69%	677	48
HAMFE15	905695	18	HMMER 2.1.1	PFAM: Diacylglycerol kinase catalytic domain (presumed)	PF00781	22.9	1807	1956
			WUblastx. 64	(Q9NP48) PUTATIVE LIPID KINASE (CDNA FLJ10842 FIS, CLONE NT2RP4001343)	Q9NP48	93%	1495	2757
HAMFE15	823350	192	blastx.2	PUTATIVE LIPID KINASE (CDNA FLJ10842 FIS, CLONE NT2RP4001343).	sp Q9NP48 Q9NP48	93%	1503	2756
HAMGR28	892971	19	WUblastx. 64	(AAH07438) Similar to RIKEN cDNA 2610511E22 gene.	AAH07438	100%	59	823
HAPOM49	769555	20	WUblastx. 64	(Q9BZM1) GROUP XII SECRETED PHOSPHOLIPASE A2.	Q9BZM1	99%	251	817
HATBR65	635514	21	WUblastx. 64	(Q9H728) CDNA: FLJ21463 FIS, CLONE COL04765.	Q9H728	70% 68%	750 801	610 754
HAUAI83	639009	22	WUblastx.	(BAB27250) 13 days embryo liver cDNA, RIKEN full-le	BAB27250	88%	160	399

[illegible]

			WUblastx. 64	(O60487) EPITHELIAL V-LIKE ANTIGEN PRECURSOR (EPITHELIAL V-LIKE ANTIG	O60487	94%	107	751
HCNSM70	589445	203	WUblastx. 64	(O60487) EPITHELIAL V-LIKE ANTIGEN PRECURSOR (EPITHELIAL V-LIKE ANTIG	O60487	100% 99%	161 408	409 806
HCWDS72	707833	37	WUblastx. 64	conserved hypothetical protein PA1527 [imported] - Pseudomonas aeruginosa (strain PAO1)	pir D83454 D83454	77%	318	4
HCWKC15	553621	38	WUblastx. 64	(Q9NX85) CDNA FLJ20378 FIS, CLONE KAIJA0536.	Q9NX85	77% 56% 63%	538 710 708	419 663 532
HDHEB60	499233	39	WUblastx. 64	(Q9Y5Y5) PEROXISOMAL BIOGENESIS FACTOR 16.	Q9Y5Y5	81%	277	1284
HDPBA28	1062783	40	WUblastx. 64	(Q9UKY2) ADIPOCYTE-DERIVED LEUCINE AMINOPEPTIDASE.	Q9UKY2	94%	259	3081
HDPBA28	866429	204	HMMER 2.1.1	PFAM: Peptidase family M1	PF01433	613.6	228	1391
			WUblastx. 64	(Q9UKY2) ADIPOCYTE-DERIVED LEUCINE AMINOPEPTIDASE.	Q9UKY2	99%	69	2891
HDPCL63	1019008	41	WUblastx. 64	(Q9Y519) HYPOTHETICAL 42.3 KDA PROTEIN.	Q9Y519	99%	14	835
HDPCL63	847045	205	WUblastx. 64	(Q9Y519) HYPOTHETICAL 42.3 KDA PROTEIN.	Q9Y519	97%	2	730
HDPGT01	771583	44	WUblastx. 64	(Q9Y2B3) LCAT-LIKE PROTEIN (LLPL).	Q9Y2B3	100% 100%	8 264	262 1244
HDPJM30	879325	46	WUblastx. 64	(O94759) LONG TRANSIENT RECEPTOR POTENTIAL CHANNEL 2 (LTRPC	TRL2_HU MAN	99%	17	1633
HDPJM30	603517	207	WUblastx. 64	(O94759) LONG TRANSIENT RECEPTOR POTENTIAL CHANNEL 2 (LTRPC	TRL2_HU MAN	89% 96% 98%	416 378 1	1312 530 378
HDPMM88	972734	47	HMMER 2.1.1	PFAM: E1-E2 ATPase	PF00122	31	475	543
			WUblastx. 64	(P98198) POTENTIAL PHOSPHOLIPID-TRANSPORTING ATPASE ID (EC	AT1D_HU MAN	66% 32%	106 2917	2907 2991
HDPMM88	906121	208	blastx.2	(AF038007) FIC1 [Homo sapiens]	gb AAC634	62%	3	467

HDPMM88	874074	211	blastx.2	(AF038007) FIC1 [Homo sapiens]	61.1]	56%	1023	13
HDPOJ08	731863	48	WUblastx. 64	(Q9H7X1) CDNA FLJ14153 FIS, CLONE NT2RM1000092, WEAKLY SIMILAR TO MUL	Q9H7X1	84% 30% 99%	524 315 12	904 479 524
HDPPN86	1037893	49	WUblastx. 64	(Q9BVN4) HYPOTHETICAL 59.4 KDA PROTEIN.	Q9BVN4	77% 100% 97% 47% 98%	5063 919 1942 4983 4611	5194 1308 2175 5045 4799
HDPSB18	1043263	50	WUblastx. 64	(Q9H5R3) CDNA: FLJ23147 FIS, CLONE LNG09295.	Q9H5R3	70%	3363	3163
HDPSH53	1309174	51	WUblastx. 64	(Q9H257) CASPASE RECRUITMENT DOMAIN PROTEIN 9.	Q9H257	79% 100%	1011 262	1184 426
HDPSH53	1040056	218	WUblastx. 64	(Q9H257) CASPASE RECRUITMENT DOMAIN PROTEIN 9.	Q9H257	100% 65% 92%	1131 1010 301	1184 1114 423
HDPSP01	689129	220	WUblastx. 64	(Q9BR97) UNKNOWN (PROTEIN FOR MGC:10763).	Q9BR97	90% 98% 100%	227 1078 1664	1114 1668 1744
HDPUW68	812737	54	HMMER 2.1.1	PFAM: Immunoglobulin domain	PF00047	38.9	844	1005
			WUblastx. 64	(Q9Y286) QA79 MEMBRANE PROTEIN, ALLELIC VARIANT AIRM-1B PRECURSOR.	Q9Y286	95%	70	1440
HDPXY01	879048	55	WUblastx. 64	hypothetical protein DKFZp434A139.1 - human (fragments)	pir T43490 T43490	50% 83%	637 3	678 620
HDTBD53	972757	56	WUblastx. 64	(Q9BTV4) UNKNOWN (PROTEIN FOR MGC:3222).	Q9BTV4	100%	183	1382
HDTBV77	785879	57	WUblastx. 64	(Q9BT94) UNKNOWN (PROTEIN FOR MGC:10848).	Q9BT94	99% 69%	65 2131	2137 2169
HDTDQ23	1306984	58	WUblastx. 64	calcium-binding protein (clone pMP41) - mouse (fragment)	pir S04970 S 04970	100%	1611	1709

HDTDQ23	879009	226	WUblastx. 64	calcium-binding protein (clone pMP41) - mouse (fragment)	pir S04970 S 04970	100%	1623	1721
HE2DE47	619852	59	WUblastx. 64	(Q9NZN8) NOT2P (CCR4-NOT TRANSCRIPTION COMPLEX, SUBUNIT 2).	Q9NZN8	96%	808	2427
HE2NV57	740750	60	WUblastx. 64	(Q9UGV6) BK445C9.3 (HIGH-MOBILITY GROUP (NONHISTONE CHROMOSOMAL) PROT	Q9UGV6	31% 66%	321 71	866 106
HE2PH36	570903	61	WUblastx. 64	(AAH07609) Similar to hypothetical protein PRO1722.	AAH07609	56% 90% 68%	1359 1524 1484	1285 1492 1353
HE8DS15	847060	62	WUblastx. 64	(Q9WVVT0) SEVEN TRANSMEMBRANE RECEPTOR.	Q9WVVT0	80% 24% 87%	1 48 269	270 146 985
HEOMQ63	603533	64	WUblastx. 64	(Q9BQM3) D1842G6.1.1 (NOVEL PROTEIN) (FRAGMENT).	Q9BQM3	100% 100% 99%	1036 592 635	1293 639 937
HFABH95	566712	66	WUblastx. 64	(Q9QZH5) PUTATIVE PHOSPHATE/PHOSPHOENOLPYRUVATE TRANSLOCATOR.	Q9QZH5	88% 65%	513 9	944- 77
HFAEF57	534142	67	WUblastx. 64	(Q9HBN2) HYPOTHETICAL 15.8 KDA PROTEIN.	Q9HBN2	47%	601	425
HFCEB37	411345	68	WUblastx. 64	(Q9NYC6) NEURONAL SPECIFIC TRANSCRIPTION FACTOR DAT1.	Q9NYC6	94%	4	204
HFGAD82	513669	70	WUblastx. 64	membrane glycoprotein M6 - mouse	pir I78556 I 78556	92%	249	410
HFUR10	532060	71	WUblastx. 64	(AAK55521) PRO0764.	AAK55521	47% 75%	369 497	307 411
HFTBM50	545012	72	WUblastx. 64	(Q9H8P0) CDNA FLJ13352 FIS, CLONE OVARC1002165, WEAKLY SIMILAR TO 3-O	Q9H8P0	100% 91%	23 198	229 524
HFXXJ44	701988	75	WUblastx. 64	(Q9N083) UNNAMED PORTEIN PRODUCT.	Q9N083	57%	1378	1082
HFXT05	658690	76	WUblastx. 64	(Q9H5H7) CDNA: FLJ23425 FIS, CLONE HEP22862.	Q9H5H7	81%	5	1015
HGBHI35	570262	77	HMMER	PFAM: Enoyl-CoA hydratase/isomerase family	PF00378	184.6	213	722

			2.1.1	(Q9DBD3) 1300017C12RIK PROTEIN.	Q9DBD3	90%	225	962
			WUblastx. 64					
HHGCM76	662329	81	WUblastx. 64	(Q96FV2) Unknown (protein for IMAGE:3945715) (Fragment).	Q96FV2	94% 98%	7 378	114 536
HHGCM76	383547	230	WUblastx. 64	(Q96FV2) Unknown (protein for IMAGE:3945715) (Fragment).	Q96FV2	94% 98%	7 378	114 536
HHPEN62	695134	82	HMME 2.1.1	PFAM: Peptidase family M20/M25/M40	PF01546	148.9	510	1535
			WUblastx. 64	(Q96KN2) Glutamate carboxypeptidase-like protein 2.	Q96KN2	99%	183	1706
HJABB94	456466	83	WUblastx. 64	(Q9BWW3) PROTEIN KINASE NYD-SP15.	Q9BWW3	100% 38% 94%	8 1127 1227	250 1192 1523
HJACG30	895505	84	WUblastx. 64	(Q9UM21) UDP-GLCNAC:A-1,3-D-MANNOSIDE B-1,4-N-ACETYLGLUCOSAMINYLTRANS	Q9UM21	96%	291	389
HJBCY35	719729	85	WUblastx. 64	hypothetical protein DKFZp586J0619.1 - human (fragment)	pirT08758 T08758	100%	1	1212
HJPAD75	651337	86	WUblastx. 64	(Q9H5F8) CDNA: FLJ23476 FIS, CLONE HSI14935.	Q9H5F8	98%	8	232
HKABZ65	862030	87	WUblastx. 64	(Q96LB9) Peptidoglycan recognition protein-I-alpha precursor.	Q96LB9	90% 39%	77 137	802 541
HKABZ65	665424	233	WUblastx. 64	(Q96LB9) Peptidoglycan recognition protein-I-alpha precursor.	Q96LB9	99% 45%	69 129	794 533
HKACB56	554616	88	HMME 2.1.1	PFAM: Kazal-type serine protease inhibitor domain	PF00050	76.3	114	266
			WUblastx. 64	(P01001) ACROSIN INHIBITORS IIA AND IIB (BUSI-II).	IAC2_BOV IN	82%	96	266
HKACD58	552465	234	WUblastx. 64	(Q96BH2) Hypothetical 34.4 kDa protein.	Q96BH2	86% 87%	795 122	1208 724
HKAEV06	638238	235	WUblastx. 64	(Q9NVA4) CDNA FLJ10846 FIS, CLONE NT2RP4001373.	Q9NVA4	96% 100% 96%	367 197 480	459 367 1541

HKAF166	946512	91	WUblastx. 64	(Q9CPS2) 4933428I03RIK PROTEIN.	Q9CPS2	72% 62% 84%	29 82 274	61 231 828
HKAF166	889258	236	blastx	(AF022985) No definition line found [Caenorhabditis elegans]	gb AAB69975.1	21% 25% 29%	292 562 691	543 702 801
HKAF166	904790	237	blastx.2	(AJ271091) B-ind1 protein [Homo sapiens]	emb CAB69070.1	34% 45%	12 298	296 516
HKB1E57	876571	92	HMMER 2.1.1	PFAM: Uncharacterized protein family UPF0004	PF00919	320.5	178	843
			WUblastx. 64	(Q9BWS5) DJ1187J4.4 (CGI-05 PROTEIN (LOC51654) SIMILAR TO RAT CDK5 AC	Q9BWS5	99%	1	879
HKB1E57	654871	238	WUblastx. 64	(Q9BVG6) SIMILAR TO CGI-05 PROTEIN.	Q9BVG6	90%	78	167
HKFBC53	701893	239	WUblastx. 64	hypothetical protein F16H11.1 - Caenorhabditis elegans	pir T16084 T16084	45% 59% 50% 37% 37%	132 11 82 566 293	305 106 129 673 1366
HKFBC53	513190	240	WUblastx. 64	hypothetical protein F16H11.1 - Caenorhabditis elegans	pir T16084 T16084	35%	135	902
HKFBC53	383426	241	WUblastx. 64	hypothetical protein F16H11.1 - Caenorhabditis elegans	pir T16084 T16084	38% 32%	704 135	949 713
HKGDL36	877489	94	WUblastx. 64	(Q9UHG2) PROSAA5 PRECURSOR (GRANIN-LIKE NEUROENDOCRINE PEPTIDE PRECUR	Q9UHG2	100% 63%	563 53	793 409
HKGDL36	704088	242	WUblastx. 64	(Q9UHG2) PROSAA5 PRECURSOR (GRANIN-LIKE NEUROENDOCRINE PEPTIDE PRECUR	Q9UHG2	82% 49%	99 55	830 555
HKJSB57	625956	95	WUblastx. 64	(AAL36150) Smoothelin-B3.	AAL36150	28% 100% 98% 27% 26% 44%	262 201 1107 271 532 954	582 1013 1256 480 966 1052

HKMLM11	514788	96	WUblastx. 64	(Q9P059) HSPC323 (FRAGMENT).	Q9P059	71% 85%	332 148	562 462
HKMMW74	581399	97	WUblastx. 64	(AAG23169) HC6.	AAG23169	73%	1784	1662
HLDQR62	753742	99	WUblastx. 64	(Q9NQW2) PROGRESSIVE ANKYLOSIS-LIKE PROTEIN.	Q9NQW2	100% 99%	41 376	382 1002
HLDQU79	740755	100	WUblastx. 64	(O75477) KE04P.	O75477	100%	105	1142
HLICQ90	791828	103	WUblastx. 64	(Q96N65) CDNA FLJ131349 fis, clone MESAN2000092, moderately similar to	Q96N65	95% 93%	571 59	636 616
HLTHR66	699812	104	HMMER 2.1.1	PFAM: PAP2 superfamily	PF01569	22.3	35	151
			WUblastx. 64	(Q9D4F2) 4932443D16RIK PROTEIN.	Q9D4F2	93%	2	229
HLTIP94	1087335	105	WUblastx. 64	(Q96DH6) Hypothetical 35.2 kDa protein.	Q96DH6	80%	579	740
HLTIP94	1047690	244	HMMER 2.1.1	PFAM: RNA recognition motif. (a.k.a. RRM, RBD, or RNP domain)	PF00076	143.1	40	-172
HLWAA17	629552	106	WUblastx. 64	(Q9NY26) IRT1 PROTEIN (SIMILAR TO ZINC/IRON REGULATED TRANSPORTER-LIK	Q9NY26	99%	85	960
HMADK33	561941	108	WUblastx. 64	hypothetical protein DKFP761P2414.1 - human	pir T47139 T47139	100% 87% 96%	152 394 237	175 417 395
HMAMI15	1352406	109	blastx.14	(Q96QY4) BA134O15.1 (similar to citrate lyase) (Fragment).	Q96QY4	99%	85	1023
HMAMI15	1049263	245	WUblastx. 64	(Q96QY4) BA134O15.1 (similar to citrate lyase) (Fragment).	Q96QY4	79% 100%	372 84	920 440
HMCIFY13	635301	110	WUblastx. 64	(AAL32175) Chromosome 17 open reading frame 26.	AAL32175	95%	36	737
HMEED18	560775	112	WUblastx. 64	(Q9H651) CDNA: FLJ22604 FIS, CLONE HSI04630 (BBP-LIKE PROTEIN 2).	Q9H651	93%	34	696
HMSDL37	973996	115	WUblastx. 64	(Q9H743) CDNA: FLJ21394 FIS, CLONE COL03536.	Q9H743	66%	1189	1497
HMSFI26	560229	116	WUblastx.	(Q14713) POT. ORF V.	Q14713	57%	1075	1019

HMVBS81	639203	117	64	WUblastx. 64	(O95070) 54TMP.			39%	1041	805
HMWFT65	562063	119	64	WUblastx. 64	(Q96AZ2) Similar to hypothetical protein FLJ21463.		Q95070	100%	10	450
HNFFC43	753337	121	64	WUblastx. 64	(Q96BY8) Hypothetical 55.2 kDa protein.		Q96AZ2	67%	1342	1205
HNFIY77	634551	122	64	WUblastx. 64	(AAL47020) KCCR13L.		Q96BY8	97%	319	453
HNFIJ07	577013	123	64	WUblastx. 64	(AAL55831) Hypothetical 14.1 kDa protein.		AAL47020	96%	866	1030
HNGIJ31	519120	125	64	WUblastx. 64	(Q9N083) UNNAMED PORTEIN PRODUCT.		AAL55831	99%	105	866
HNGJE50	561568	126	64	WUblastx. 64	(Q9HBS7) HYPOTHETICAL 14.2 KDA PROTEIN.		Q9N083	73%	566	610
HNHEU93	634851	129	64	WUblastx. 64	(Q9H387) PRO2550.		Q9HBS7	54%	615	725
HNHFM14	664507	130	64	WUblastx. 64	(Q9N8S9) POSSIBLE (HHV-6) U1102, VARIANT A DNA, COMPLETE VIRION GENOM		Q9H387	66%	454	561
HNHNB29	895462	131	64	WUblastx. 64	(Q9P195) PRO1722.		Q9HBS7	64%	1028	945
HNHOD46	843488	132	64	WUblastx. 64	(O60448) NEURONAL THREAD PROTEIN AD7C-NTP.		Q9H387	62%	919	734
								67%	741	418
								74%	6	122
								45%	17	223
								63%	11	124
								79%	9	110
								76%	9	122
								79%	1543	1674
								75%	1398	1553
								76%	334	552
								56%	646	921
								56%	645	713
								52%	844	894
								73%	331	498
								59%	353	625

HNTBI26	1310821	133	WUblastx. 64	(Q96F65) Similar to RIKEN cDNA 0610031J06 gene (Fragment).	Q96F65	50%	828	917
HNTBI26	796807	251	WUblastx. 64	(Q96F65) Similar to RIKEN cDNA 0610031J06 gene (Fragment).	Q96F65	94%	516	992
HNTBL27	545534	134	WUblastx. 64	(Q96AA3) Putative endoplasmic reticulum multispan transmembrane prote	Q96AA3	97%	149	544
HNTCE26	1160395	135	HMMER 2.1.1	PFAM: 7 transmembrane receptor (rhodopsin family)	PF00001	29%	1096	1206
HNTCE26	853373	253	HMMER 2.1.1	PFAM: 7 transmembrane receptor (rhodopsin family)	PF00001	95%	11	154
HODDN92	422913	138	WUblastx. 64	(Q9H1Y3) DJ317G22.2 (ENCEPHALOPSIN) (PANOPSIN).	Q9H1Y3	98%	243	500
HOFMQ33	1184465	139	WUblastx. 64	(Q9H1Y3) DJ317G22.2 (ENCEPHALOPSIN) (PANOPSIN).	Q9H1Y3	33%	13	168
HOFMQ33	919896	255	HMMER 2.1.1	PFAM: von Willebrand factor type A domain	PF00092	40%	646	711
			WUblastx.	(O15232) MATRILIN-3 PRECURSOR.	MTN3_HU MAN	96%	13	261
			WUblastx.	(O15232) MATRILIN-3 PRECURSOR.	MTN3_HU	137.5	282	1037
			WUblastx.	(O15232) MATRILIN-3 PRECURSOR.	MTN3_HU	100%	111	1316
			WUblastx.	(O15232) MATRILIN-3 PRECURSOR.	MTN3_HU	23.2	63	218
			WUblastx.	(O15232) MATRILIN-3 PRECURSOR.	MTN3_HU	95%	370	495
			WUblastx.	(O15232) MATRILIN-3 PRECURSOR.	MTN3_HU	100%	12	377
			WUblastx.	(O15232) MATRILIN-3 PRECURSOR.	MTN3_HU	100%	1119	1021
			WUblastx.	(O15232) MATRILIN-3 PRECURSOR.	MTN3_HU	85%	205	1500
			WUblastx.	(O15232) MATRILIN-3 PRECURSOR.	MTN3_HU	189.8	288	815
			WUblastx.	(O15232) MATRILIN-3 PRECURSOR.	MTN3_HU	85%	204	1499

HOQM33	906694	256	64	HMIMER 2.1.1	PFAM: von Willebrand factor type A domain	MAN	162.2	318	737
HOFOC73	931871	140	64	HMIMER 2.1.1	PFAM: Papain family cysteine protease	PF00112	22.3	192	311
			64	WUblastx.	(BAB22302) Adult male kidney cDNA, RIKEN full-length	BAB22302	71% 87%	72 316	341 918
HOQBJ82	858338	262	64	WUblastx.	(CAC37795) H-I(3)mbt-like protein.	CAC37795	66% 57%	436 41	585 496
HOQBJ82	857453	263	64	HMIMER 2.1.1	PFAM: SET domain	PF00856	211.5	100	489
HOSDJ25	854234	143	64	WUblastx.	(Q9D8Y9) 1810018L05RIK PROTEIN.	Q9D8Y9	85% 86%	468 143	593 544
HPEAD79	520202	144	64	WUblastx.	(Q96NR6) CDNA FLJ30278 fis, clone BRACE2002755.	Q96NR6	48%	498	806
HPIBO15	1310868	145	64	WUblastx.	(Q9CQS3) 1110018M03RIK PROTEIN.	Q9CQS3	93%	128	757
HPIBO15	590741	265	64	WUblastx.	(Q9CQS3) 1110018M03RIK PROTEIN.	Q9CQS3	88% 95% 97%	127 507 401	402 722 508
HPJBI33	685699	146	64	WUblastx.	(O60448) NEURONAL THREAD PROTEIN AD7C-NTP.	O60448	49% 33% 51% 35% 33% 51% 59% 52% 34% 50% 47%	617 633 24 570 1317 155 154 137 41 3 886	934 890 122 872 1415 256 234 256 256 146 942
HPMDK28	846357	148	64	WUblastx.	(Q9NP77) CDNA FLJ10947 FIS, CLONE PLACE1000066, WEAKLY SIMILAR TO SSU	Q9NP77	100%	163	666

HPMDK28	639118	269	WUblastx. 64	(Q9NP77) CDNA FLJ10947 FIS, CLONE PLACE1000066, WEAKLY SIMILAR TO SSU	Q9NP77	100%	157	660
HPRAL78	844216	270	WUblastx. 64	(AAH08720) Unknown (protein for MGC:8447).	AAH08720	83% 51%	70 490	1017 1068
HPRAL78	484735	271	WUblastx. 64	(Q91XD7) Unknown (protein for MGC:18896).	Q91XD7	95%	124	336
HRABA80	882176	150	WUblastx. 64	(Q9HA75) CDNA FLJ12122 FIS, CLONE MAMMA1000129.	Q9HA75	63% 68%	221 325	310 459
HRABA80	588460	272	WUblastx. 64	(Q9HA75) CDNA FLJ12122 FIS, CLONE MAMMA1000129.	Q9HA75	63% 48% 92%	633 130 233	665 357 493
HRACD15	871221	151	WUblastx. 64	(AAH08084) Hypothetical 50.4 kDa protein.	AAH08084	98%	1452	253
HRACJ35	877666	152	WUblastx. 64	(Q9Y5X6) BLOOD PLASMA GLUTAMATE CARBOXYPEPTIDASE PRECURSOR (EC 3.4.17	Q9Y5X6	65% 99%	1519 132	1755 1472
HRACJ35	730504	274	WUblastx. 64	(Q9Y5X6) BLOOD PLASMA GLUTAMATE CARBOXYPEPTIDASE PRECURSOR (EC 3.4.17	Q9Y5X6	98% 99%	1435 99	1722 1439
HRACJ35	470546	275	blastx.2	AMINOPEPTIDASE.	sp Q9Y646 Q9Y646	100% 96%	1 507	519 785
HRGBL78	910133	153	HMME 2.1.1	PFAM: Immunoglobulin domain	PF00047	32	582	755
			WUblastx. 64	(AAL58111) FREB.	AAL58111	87%	9	1085
HROAJ39	1181699	154	WUblastx. 64	(Q96ES0) Unknown (protein for MGC:16944).	Q96ES0	92%	7	1146
HROBD68	827306	155	WUblastx. 64	(Q9H728) CDNA: FLJ21463 FIS, CLONE COL04765.	Q9H728	66% 78%	418 581	576 748
HSAWD74	460527	156	WUblastx. 64	(Q9NX85) CDNA FLJ20378 FIS, CLONE KALA0536.	Q9NX85	67%	967	674
HSDEK49	625998	282	HMME 2.1.1	PFAM: Immunoglobulin domain	PF00047	18.7	225	470
			WUblastx. 64	(Q9Y279) Z39IG PROTEIN PRECURSOR.	Q9Y279	88% 99%	444 126	1040 542

HSDFI26	834619	158	WUblastx. 64	(Q9BYJ0) KSP37.	Q9BYJ0	99%	99	767
HSDFI26	836071	283	blastx.2	(AB021123) Ksp37 [Homo sapiens]	dbj BAB397 70.1	83% 77%	238 99	768 281
HSDSE75	545057	160	WUblastx. 64	(O60245) PCDH7 (BH-PCDH)A.	O60245	100%	10	702
HSIDJ81	589447	161	WUblastx. 64	(Q9H728) CDNA: FLJ21463 FIS, CLONE COL04765.	Q9H728	74%	1289	996
HSKDA27	1074734	285	WUblastx. 64	(Q9CRM1) 2610001E17RIK PROTEIN (FRAGMENT).	Q9CRM1	70% 60% 23%	793 1686 1604	1701 1784 1741
HSKDA27	872570	286	blastx.2	(AK020169) putative [Mus musculus]	dbj BAB320 18.1	47%	666	1562
HSKGN81	676075	163	WUblastx. 64	(Q9CZY7) 2610307O08RIK PROTEIN.	Q9CZY7	68%	146	1126
HSNAD72	467397	164	WUblastx. 64	(Q9P195) PRO1722.	Q9P195	62% 53% 59%	825 623 730	730 579 536
HSUBW09	413246	168	WUblastx. 64	(Q95LL0) Hypothetical 11.3 kDa protein.	Q95LL0	73% 77%	589 327	633 611
HSVBU91	596868	169	WUblastx. 64	cytoplasmic linker protein CLIP-115 - rat	pir T42734 T42734	85%	356	171
HTAEE28	1018291	170	WUblastx. 64	(Q9D4I2) 4932408F18RIK PROTEIN.	Q9D4I2	72%	319	1161
HTEEB42	206980	172	HMME 2.1.1	PFAM: Immunoglobulin domain	PF00047	48.5	500	706
			WUblastx. 64	(AAG49022) Junctional adhesion molecule 2.	AAG49022	94%	110	952
HTELP17	836072	174	WUblastx. 64	(AAH20029) Hypothetical 39.4 kDa protein.	AAH20029	81%	22	528
HTELS08	847090	175	WUblastx. 64	(Q9JI83) EPCS26 (PLAC1) (PLACENTAL SPECIFIC PROTEIN 1).	Q9JI83	34%	33	395
HTLEP53	634852	176	WUblastx.	(Q9H728) CDNA: FLJ21463 FIS, CLONE COL04765.	Q9H728	69%	806	501

HTPCS72	854941	177	64	(O95880) UNKNOWN.	O95880	100%	2191	2577
HTPCS72	566683	293	64	(O95880) UNKNOWN.	O95880	100%	356	742
HTPIH83	919916	178	HMNER 2.1.1	PFAM: PMP-22/EMP/MP20/Claudin family	PF00822	81.5	127	660
			WUblastx. 64	(P57739) CLAUDIN-2.	CLD2_HU MAN	85%	199	807
HTPIH83	895024	294	HMNER 2.1.1	PFAM: PMP-22/EMP/MP20/Claudin family	PF00822	55.9	120	500
			WUblastx. 64	(P57739) CLAUDIN-2.	CLD2_HU MAN	87%	192	530
HTTBS64	1008159	181	WUblastx. 64	reverse transcriptase-related protein - rabbit (fragment)	pir S22049 S 22049	70% 52%	996 896	895 714
HTXJM03	603918	182	WUblastx. 64	(Q9BRH0) SIMILAR TO DKFZP727C091 PROTEIN.	Q9BRH0	100% 99%	470 564	565 1760
HTXON32	838288	183	WUblastx. 64	(Q96NR6) CDNA FLJ30278 fis, clone BRACE2002755.	Q96NR6	58% 64%	1397 1194	1498 1397
HWAAD63	838626	186	HMNER 2.1.1	PFAM: Sodium/calcium exchanger protein	PF01699	62.8	346	453
			WUblastx. 64	(Q9HC58) SODIUM/CALCIUM EXCHANGER NCKX3.	Q9HC58	65%	229	813
HWAAD63	833089	298	HMNER 2.1.1	PFAM: Sodium/calcium exchanger protein	PF01699	37.8	346	453
			blastx.2	(AF177984) potassium-dependent sodium-calcium exchanger NCKX1 [Gallus gallus]	gb AAF258 08.1 AF177 984_1	45% 41% 45% 31%	217 533 453 319	453 793 596 453
HWAAD63	793875	299	HMNER 2.1.1	PFAM: Sodium/calcium exchanger protein	PF01699	113.7	336	773
			blastx.2	(AF025664) Na-Ca+K exchanger [Bos taurus]	gb AAB888 84.1	43%	207	785

HWBFX31	799427	188	WUtblastx. 64	(Q9N083) UNNAMED PORTEIN PRODUCT.	Q9N083	56%	1663	1517
---------	--------	-----	------------------	-----------------------------------	--------	-----	------	------

RACE Protocol For Recovery of Full-Length Genes

Partial cDNA clones can be made full-length by utilizing the rapid amplification of cDNA ends (RACE) procedure described in Frohman, M.A., et al., Proc. Nat'l. Acad. Sci. USA, 85:8998-9002 (1988). A cDNA clone missing either the 5' or 3' end can be reconstructed to include the absent base pairs extending to the translational start or stop codon, respectively. In some cases, cDNAs are missing the start codon of translation, therefore. The following briefly describes a modification of this original 5' RACE procedure. Poly A+ or total RNA is reverse transcribed with Superscript II (Gibco/BRL) and an antisense or complementary primer specific to the cDNA sequence. The primer is removed from the reaction with a Microcon Concentrator (Amicon). The first-strand cDNA is then tailed with dATP and terminal deoxynucleotide transferase (Gibco/BRL). Thus, an anchor sequence is produced which is needed for PCR amplification. The second strand is synthesized from the dA-tail in PCR buffer, Taq DNA polymerase (Perkin-Elmer Cetus), an oligo-dT primer containing three adjacent restriction sites (XhoI, SalI and ClaI) at the 5' end and a primer containing just these restriction sites. This double-stranded cDNA is PCR amplified for 40 cycles with the same primers as well as a nested cDNA-specific antisense primer. The PCR products are size-separated on an ethidium bromide-agarose gel and the region of gel containing cDNA products the predicted size of missing protein-coding DNA is removed. cDNA is purified from the agarose with the Magic PCR Prep kit (Promega), restriction digested with XhoI or SalI, and ligated to a plasmid such as pBluescript SKII (Stratagene) at XhoI and EcoRV sites. This DNA is transformed into bacteria and the plasmid clones sequenced to identify the correct protein-coding inserts. Correct 5' ends are confirmed by comparing this sequence with the putatively identified homologue and overlap with the partial cDNA clone. Similar methods known in the art and/or commercial kits are used to amplify and recover 3' ends.

Several quality-controlled kits are commercially available for purchase. Similar reagents and methods to those above are supplied in kit form from Gibco/BRL for both 5' and 3' RACE for recovery of full length genes. A second kit is available from Clontech which is a modification of a related technique, SLIC (single-stranded ligation to single-stranded cDNA), developed by Dumas et al., Nucleic Acids Res., 19:5227-32 (1991). The major differences in procedure are that the RNA is alkaline hydrolyzed after reverse transcription and RNA ligase is used to join a restriction site-containing anchor primer to the first-strand cDNA. This obviates the necessity for the dA-tailing reaction which results in a polyT stretch that is difficult to sequence past.

An alternative to generating 5' or 3' cDNA from RNA is to use cDNA library double-stranded DNA. An asymmetric PCR-amplified antisense cDNA strand is synthesized with an antisense cDNA-specific primer and a plasmid-anchored primer. These primers are removed and a symmetric PCR reaction is performed with a nested cDNA-specific antisense primer and the plasmid-anchored primer.

RNA Ligase Protocol For Generating The 5' or 3' End Sequences To Obtain Full Length Genes

Once a gene of interest is identified, several methods are available for the identification of the 5' or 3' portions of the gene which may not be present in the original cDNA plasmid. These methods include, but are not limited to, filter probing, clone enrichment using specific probes and protocols similar and identical to 5' and 3' RACE. While the full length gene may be present in the library and can be identified by probing, a useful method for generating the 5' or 3' end is to use the existing sequence information from the original cDNA to generate the missing information. A method similar to 5' RACE is available for generating the missing 5' end of a desired full-length gene. (This method was published by Fromont-Racine et al., Nucleic Acids Res., 21(7):1683-1684 (1993)). Briefly, a specific RNA oligonucleotide is ligated to the 5' ends of a population of RNA presumably containing full-length gene RNA transcript and a primer set containing a primer specific to the ligated RNA oligonucleotide and a primer specific to a known sequence of the gene of interest, is used to PCR amplify the 5' portion of the desired full length gene which may then be sequenced and used to generate the full length gene. This method starts with total RNA isolated from the desired source, poly A RNA may be used but is not a prerequisite for this procedure. The RNA preparation may then be treated with phosphatase if necessary to eliminate 5' phosphate groups on degraded or damaged RNA which may interfere with the later RNA ligase step. The phosphatase if used is then inactivated and the RNA is treated with tobacco acid pyrophosphatase in order to remove the cap structure present at the 5' ends of messenger RNAs. This reaction leaves a 5' phosphate group at the 5' end of the cap cleaved RNA which can then be ligated to an RNA oligonucleotide using T4 RNA ligase. This modified RNA preparation can then be used as a template for first strand cDNA synthesis using a gene specific oligonucleotide. The first strand synthesis reaction can then be used as a template for PCR amplification of the desired 5' end using a primer specific to the ligated RNA oligonucleotide and a primer specific to the known sequence of the gene of interest. The resultant product is then sequenced and analyzed to confirm that the 5' end sequence belongs to the relevant gene.

The present invention also relates to vectors or plasmids which include such DNA sequences, as well as the use of the DNA sequences. The material deposited with the ATCC (e.g., as described in columns 2 and 3 of Table 1A, and/or as set forth in Table 1B, Table 6, or Table 7) is a mixture of cDNA clones derived from a variety of human tissue and cloned in either a plasmid vector or a phage vector, as described, for example, in Table 1A and Table 7. These deposits are referred to as "the deposits" herein. The tissues from which some of the clones were derived are listed in Table 7, and the vector in which the corresponding cDNA is contained is also indicated in Table 7. The deposited material includes cDNA clones corresponding to SEQ ID NO:X described, for example, in Table 1A and/or Table 1B (ATCC Deposit No:Z). A clone which is isolatable from the ATCC Deposits by use of a sequence listed as SEQ ID NO:X, may include the entire

coding region of a human gene or in other cases such clone may include a substantial portion of the coding region of a human gene. Furthermore, although the sequence listing may in some instances list only a portion of the DNA sequence in a clone included in the ATCC Deposits, it is well within the ability of one skilled in the art to sequence the DNA included in a clone contained
5 in the ATCC Deposits by use of a sequence (or portion thereof) described in, for example Tables 1A and/or Table 1B or Table 2, by procedures hereinafter further described, and others apparent to those skilled in the art.

Also provided in Table 1A and Table 7 is the name of the vector which contains the cDNA clone. Each vector is routinely used in the art. The following additional information is provided
10 for convenience.

Vectors Lambda Zap (U.S. Patent Nos. 5,128,256 and 5,286,636), Uni-Zap XR (U.S. Patent Nos. 5,128, 256 and 5,286,636), Zap Express (U.S. Patent Nos. 5,128,256 and 5,286,636), pBluescript (pBS) (Short, J. M. et al., *Nucleic Acids Res.* 16:7583-7600 (1988); Alting-Mees, M. A. and Short, J. M., *Nucleic Acids Res.* 17:9494 (1989)) and pBK (Alting-Mees, M. A. et al.,
15 *Strategies* 5:58-61 (1992)) are commercially available from Stratagene Cloning Systems, Inc., 11011 N. Torrey Pines Road, La Jolla, CA, 92037. pBS contains an ampicillin resistance gene and pBK contains a neomycin resistance gene. Phagemid pBS may be excised from the Lambda Zap and Uni-Zap XR vectors, and phagemid pBK may be excised from the Zap Express vector. Both phagemids may be transformed into *E. coli* strain XL-1 Blue, also available from Stratagene.

Vectors pSport1, pCMVSport 1.0, pCMVSport 2.0 and pCMVSport 3.0, were obtained
20 from Life Technologies, Inc., P. O. Box 6009, Gaithersburg, MD 20897. All Sport vectors contain an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, also available from Life Technologies. See, for instance, Gruber, C. E., et al., *Focus* 15:59- (1993). Vector lafmid BA (Bento Soares, Columbia University, New York, NY) contains an ampicillin resistance
25 gene and can be transformed into *E. coli* strain XL-1 Blue. Vector pCR[®]2.1, which is available from Invitrogen, 1600 Faraday Avenue, Carlsbad, CA 92008, contains an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, available from Life Technologies. See, for instance, Clark, J. M., *Nuc. Acids Res.* 16:9677-9686 (1988) and Mead, D. et al., *Bio/Technology* 9: (1991).

The present invention also relates to the genes corresponding to SEQ ID NO:X, SEQ ID NO:Y, and/or the deposited clone (ATCC Deposit No:Z). The corresponding gene can be isolated in accordance with known methods using the sequence information disclosed herein. Such methods include preparing probes or primers from the disclosed sequence and identifying or
30 amplifying the corresponding gene from appropriate sources of genomic material.

Also provided in the present invention are allelic variants, orthologs, and/or species homologs. Procedures known in the art can be used to obtain full-length genes, allelic variants, splice variants, full-length coding portions, orthologs, and/or species homologs of genes
35

corresponding to SEQ ID NO:X or the complement thereof, polypeptides encoded by genes corresponding to SEQ ID NO:X or the complement thereof, and/or the cDNA contained in ATCC Deposit No:Z, using information from the sequences disclosed herein or the clones deposited with the ATCC. For example, allelic variants and/or species homologs may be isolated and identified by making suitable probes or primers from the sequences provided herein and screening a suitable nucleic acid source for allelic variants and/or the desired homologue.

The polypeptides of the invention can be prepared in any suitable manner. Such polypeptides include isolated naturally occurring polypeptides, recombinantly produced polypeptides, synthetically produced polypeptides, or polypeptides produced by a combination of these methods. Means for preparing such polypeptides are well understood in the art.

The polypeptides may be in the form of the secreted protein, including the mature form, or may be a part of a larger protein, such as a fusion protein (see below). It is often advantageous to include an additional amino acid sequence which contains secretory or leader sequences, prosequences, sequences which aid in purification, such as multiple histidine residues, or an additional sequence for stability during recombinant production.

The polypeptides of the present invention are preferably provided in an isolated form, and preferably are substantially purified. A recombinantly produced version of a polypeptide, including the secreted polypeptide, can be substantially purified using techniques described herein or otherwise known in the art, such as, for example, by the one-step method described in Smith and Johnson, Gene 67:31-40 (1988). Polypeptides of the invention also can be purified from natural, synthetic or recombinant sources using techniques described herein or otherwise known in the art, such as, for example, antibodies of the invention raised against the polypeptides of the present invention in methods which are well known in the art.

The present invention provides a polynucleotide comprising, or alternatively consisting of, the nucleic acid sequence of SEQ ID NO:X, and/or the cDNA sequence contained in ATCC Deposit No:Z. The present invention also provides a polypeptide comprising, or alternatively, consisting of, the polypeptide sequence of SEQ ID NO:Y, a polypeptide encoded by SEQ ID NO:X or a complement thereof, a polypeptide encoded by the cDNA contained in ATCC Deposit No:Z, and/or the polypeptide sequence encoded by a nucleotide sequence in SEQ ID NO:B as defined in column 6 of Table 1C. Polynucleotides encoding a polypeptide comprising, or alternatively consisting of the polypeptide sequence of SEQ ID NO:Y, a polypeptide encoded by SEQ ID NO:X, a polypeptide encoded by the cDNA contained in ATCC Deposit No:Z, and/or a polypeptide sequence encoded by a nucleotide sequence in SEQ ID NO:B as defined in column 6 of Table 1C are also encompassed by the invention. The present invention further encompasses a polynucleotide comprising, or alternatively consisting of, the complement of the nucleic acid sequence of SEQ ID NO:X, a nucleic acid sequence encoding a polypeptide encoded by the

complement of the nucleic acid sequence of SEQ ID NO:X, and/or the cDNA contained in ATCC Deposit No:Z.

Moreover, representative examples of polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the sequences delineated in Table 1C column 6, or any combination thereof. Additional, representative examples of polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the complementary strand(s) of the sequences delineated in Table 1C column 6, or any combination thereof. In further embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in Table 1C, column 6, and have a nucleic acid sequence which is different from that of the BAC fragment having the sequence disclosed in SEQ ID NO:B (see Table 1C, column 5). In additional embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in Table 1C, column 6, and have a nucleic acid sequence which is different from that published for the BAC clone identified as BAC ID NO:A (see Table 1C, column 4). In additional embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in Table 1C, column 6, and have a nucleic acid sequence which is different from that contained in the BAC clone identified as BAC ID NO:A (see Table 1C, column 4). Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides and polypeptides are also encompassed by the invention.

Further, representative examples of polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the sequences delineated in column 6 of Table 1C which correspond to the same Clone ID (see Table 1C, column 1), or any combination thereof. Additional, representative examples of polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the complementary strand(s) of the sequences delineated in column 6 of Table 1C which correspond to the same Clone ID (see Table 1C, column 1), or any combination thereof. In further embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in column 6 of Table 1C which correspond to the same Clone ID (see Table 1C, column 1) and have a nucleic acid sequence which is different from that of the BAC fragment having the sequence disclosed in SEQ ID NO:B (see Table 1C, column 5). In additional embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in column 6 of Table 1C which correspond to the same Clone ID (see Table 1C, column 1) and have a nucleic acid sequence which is different from that published for the BAC clone identified as BAC ID NO:A (see Table 1C, column 4). In additional embodiments, the above-described

polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in column 6 of Table 1C which correspond to the same Clone ID (see Table 1C, column 1) and have a nucleic acid sequence which is different from that contained in the BAC clone identified as BAC ID NO:A (see Table 1C, column 4). Polypeptides encoded by these polynucleotides, other
5 polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides and polypeptides are also encompassed by the invention.

Further, representative examples of polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the
10 sequences delineated in column 6 of Table 1C which correspond to the same contig sequence identifier SEQ ID NO:X (see Table 1C, column 2), or any combination thereof. Additional, representative examples of polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the complementary strand(s) of the sequences delineated in column 6 of Table 1C which correspond to the same contig sequence
15 identifier SEQ ID NO:X (see Table 1C, column 2), or any combination thereof. In further embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in column 6 of Table 1C which correspond to the same contig sequence identifier SEQ ID NO:X (see Table 1C, column 2) and have a nucleic acid sequence which is different from that of the BAC fragment having the sequence disclosed in SEQ ID NO:B
20 (see Table 1C, column 5). In additional embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in column 6 of Table 1C which correspond to the same contig sequence identifier SEQ ID NO:X (see Table 1C, column 2) and have a nucleic acid sequence which is different from that published for the BAC clone identified as BAC ID NO:A (see Table 1C, column 4). In additional embodiments, the above-
25 described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in column 6 of Table 1C which correspond to the same contig sequence identifier SEQ ID NO:X (see Table 1C, column 2) and have a nucleic acid sequence which is different from that contained in the BAC clone identified as BAC ID NO:A (See Table 1C, column 4). Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and
30 antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides and polypeptides are also encompassed by the invention.

Moreover, representative examples of polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the
35 sequences delineated in the same row of Table 1C column 6, or any combination thereof. Additional, representative examples of polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the complementary

strand(s) of the sequences delineated in the same row of Table 1C column 6, or any combination thereof. In preferred embodiments, the polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the complementary strand(s) of the sequences delineated in the same row of Table 1C column 6, wherein sequentially
5 delineated sequences in the table (i.e. corresponding to those exons located closest to each other) are directly contiguous in a 5' to 3' orientation. In further embodiments, above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in the same row of Table 1C, column 6, and have a nucleic acid sequence which is different from that of the BAC fragment having the sequence disclosed in SEQ ID NO:B (see Table 1C, column 5). In
10 additional embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in the same row of Table 1C, column 6, and have a nucleic acid sequence which is different from that published for the BAC clone identified as BAC ID NO:A (see Table 1C, column 4). In additional embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated in the
15 same row of Table 1C, column 6, and have a nucleic acid sequence which is different from that contained in the BAC clone identified as BAC ID NO:A (see Table 1C, column 4). Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention.

In additional specific embodiments, polynucleotides of the invention comprise, or
20 alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the sequences delineated in column 6 of Table 1C, and the polynucleotide sequence of SEQ ID NO:X (e.g., as defined in Table 1C, column 2) or fragments or variants thereof. Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention.

In additional specific embodiments, polynucleotides of the invention comprise, or
25 alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the sequences delineated in column 6 of Table 1C which correspond to the same Clone ID (see Table 1C, column 1), and the polynucleotide sequence of SEQ ID NO:X (e.g., as defined in Table 1A, Table 1B, or Table 1C) or fragments or variants thereof. In preferred embodiments, the delineated
30 sequence(s) and polynucleotide sequence of SEQ ID NO:X correspond to the same Clone ID. Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention.

In further specific embodiments, polynucleotides of the invention comprise, or
35 alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more of the sequences delineated in the same row of column 6 of Table 1C, and the polynucleotide sequence of SEQ ID NO:X (e.g., as defined in Table 1A, Table 1B, or Table 1C) or fragments or variants thereof. In preferred embodiments, the delineated sequence(s) and polynucleotide sequence of

SEQ ID NO:X correspond to the same row of column 6 of Table 1C. Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention.

5 In additional specific embodiments, polynucleotides of the invention comprise, or alternatively consist of a polynucleotide sequence in which the 3' 10 polynucleotides of one of the sequences delineated in column 6 of Table 1C and the 5' 10 polynucleotides of the sequence of SEQ ID NO:X are directly contiguous. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by 10 these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

In additional specific embodiments, polynucleotides of the invention comprise, or 15 alternatively consist of, a polynucleotide sequence in which the 3' 10 polynucleotides of one of the sequences delineated in column 6 of Table 1C and the 5' 10 polynucleotides of a fragment or variant of the sequence of SEQ ID NO:X are directly contiguous. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. 20 Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

In specific embodiments, polynucleotides of the invention comprise, or alternatively 25 consist of, a polynucleotide sequence in which the 3' 10 polynucleotides of the sequence of SEQ ID NO:X and the 5' 10 polynucleotides of the sequence of one of the sequences delineated in column 6 of Table 1C are directly contiguous. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded 30 by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

In specific embodiments, polynucleotides of the invention comprise, or alternatively 35 consist of, a polynucleotide sequence in which the 3' 10 polynucleotides of a fragment or variant of the sequence of SEQ ID NO:X and the 5' 10 polynucleotides of the sequence of one of the sequences delineated in column 6 of Table 1C are directly contiguous. Nucleic acids which

hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides, are also encompassed by the invention.

In further specific embodiments, polynucleotides of the invention comprise, or alternatively consist of, a polynucleotide sequence in which the 3' 10 polynucleotides of one of the sequences delineated in column 6 of Table 1C and the 5' 10 polynucleotides of another sequence in column 6 are directly contiguous. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

In specific embodiments, polynucleotides of the invention comprise, or alternatively consist of, a polynucleotide sequence in which the 3' 10 polynucleotides of one of the sequences delineated in column 6 of Table 1C and the 5' 10 polynucleotides of another sequence in column 6 corresponding to the same Clone ID (see Table 1C, column 1) are directly contiguous. Nucleic acids which hybridize to the complement of these 20 lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

In specific embodiments, polynucleotides of the invention comprise, or alternatively consist of, a polynucleotide sequence in which the 3' 10 polynucleotides of one sequence in column 6 corresponding to the same contig sequence identifier SEQ ID NO:X (see Table 1C, column 2) are directly contiguous. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

In specific embodiments, polynucleotides of the invention comprise, or alternatively consist of a polynucleotide sequence in which the 3' 10 polynucleotides of one of the sequences delineated in column 6 of Table 1C and the 5' 10 polynucleotides of another sequence in column 6 corresponding to the same row are directly contiguous. In preferred embodiments, the 3' 10 polynucleotides of one of the sequences delineated in column 6 of Table 1C is directly contiguous with the 5' 10 polynucleotides of the next sequential exon delineated in Table 1C, column 6. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

Table 3

Many polynucleotide sequences, such as EST sequences, are publicly available and accessible through sequence databases and may have been publicly available prior to conception of the present invention. Preferably, such related polynucleotides are specifically excluded from the scope of the present invention. Accordingly, for each contig sequence (SEQ ID NO:X) listed in the fifth column of Table 1A and/or the fourth column of Table 1B, preferably excluded are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a is any integer between 1 and the final nucleotide minus 15 of SEQ ID NO:X, b is an integer of 15 to the final nucleotide of SEQ ID NO:X, where both a and b correspond to the positions of nucleotide residues shown in SEQ ID NO:X, and where b is greater than or equal to a + 14. More specifically, preferably excluded are one or more polynucleotides comprising a nucleotide sequence described by the general formula of a-b, where a and b are integers as defined in columns 4 and 5, respectively, of Table 3. In specific embodiments, the polynucleotides of the invention do not consist of at least one, two, three, four, five, ten, or more of the specific polynucleotide sequences referenced by the Genbank Accession No. as disclosed in column 6 of Table 3 (including for example, published sequence in connection with a particular BAC clone). In further embodiments, preferably excluded from the invention are the specific polynucleotide sequence(s) contained in the clones corresponding to at least one, two, three, four, five, ten, or more of the available material having the accession numbers identified in the sixth column of this Table (including for example, the actual sequence contained in an identified BAC clone). In no way is this listing meant to encompass all of the sequences which may be excluded by the general formula, it is just a representative example. All references available through these accessions are hereby incorporated by reference in their entirety.

Table 3

cDNA Clone ID	SEQ ID NO: X	Contig ID:	EST Disclaimer Range of a Range of b	Accession Number's
H2CBU83	11	884134	1 - 2689 15 - 2703	BE613316, BE739453, AW961199, AV658769, BE785673, AW963399, BF037119, BG030580, BF036149, BF699154, BF033837, BF697524, BF695438, BF036638, BF701778, BG030507, AW377122, BF665913, BF699078, AW377125, BF665294, AV658829, BF667082, BG166746, AW851261, BF241480, AW850925, AI978869, BF695890, AA845339, BF668201, BF699860, BF085620, AA405940, BE612726, BF666583, BF667787, BE739116, BF665805, AW752845, BF701466, AI800939, BG121547, AI620357, BF700054, AW851052, AI924880, AW752835, AI800807, BF697582, BF700919, BF667321, AI139396, BE958619, AV692286, AI955392, AW752844, BE042841, BF698625, BF244588, AW440250, BF698345, AW152584, AW955901, AI671911, AA535832, AW850982, AI935579, BE089877, AW752868, AI683119, BF130660, D61864, AW630835, AI621153, BF514638, BF697211, AW192136, AI286255, AA403153, D62117, AW028833, N78154, BF154792, BF665821, AI538061, N64201, AW851056, AW938593, BE093579, AW938596, AA928873, AV651183, BE817020, AV657915, AV657131, BF666276, AV660141, AI699025, AI016115, R66206, N45386, D61708, BE868472, AA403241, AV657914, AA313513, AV682813, H88565, AA531589, R38698, AA857811, H42631, AA307010, R67084, BF334107, AW971385, R68027, AW021104, AW296538, BG166828, AI887214, AW468968, R64487, H88521, BF697149, R94825, R68028, R92884, R65584, AA377208, AI050980, AA318641, D62093, BF813323, N78160, T73957, D61982, D62303, D62026, AI806100, AA095925, N56560, T73925, AA507092, BF750358, BE148612, BF750357, BE867141, T73948, N88292, T73916, BE044052, H95089, H73281, AV660091, AF257182.1, AF346711. 1.
H6EDC19	12	543259	1 - 746 15 - 760	AI090153, AI767722, BG116691, AI797075, BF528376, AI698172, AI681570, BE671343, AI539236, AV704244, AI539246, BE264613, AA864681, AW204700, AI808925, BE676036, T79284, BF445461, AA400027, AI209219, AA300244, AA427390, AA302217, AA252421, AA406631, AI869251, BF969629, AI262951, AI498669, AA300243, AW072158, T79197, AA411721, AV682333, F34003, AI123608, AI123694, AA203656, AV707802, BF575227, N77966, AW956121, N71852, BF732312, AI338999, AA704675, AI742966, AI176725, AV744696, AI039168, AA329423, AA680411, F10345, T85994, AV682639, AA731436, AV735262, AV733694, AA505796, AW959998, BF793146, H79631, R00088, BF978632, BG034327, AV716953, AW955313, BG032189, AV717860, AV716893, BF244606, AV733654, BG030662, AI802907, AA528524, AA973692, AA658895, AV714250, AV718258, AV716004, BF029739, F26324, AW772717, BE909294, AA370595, AI392630, BF529817, AI914394, BE748127, AA975366, BF029799, AI126532, AA977864, R38577, AI093884, AW264528, AI351443, AA916014, AA359165, AA594324, AI682171, AA404535, BG034254, T75123, AI832970, AA973611, AI833308, AI814033, BE781781, BF035996, BF036344, AA888167, BE541776, BF109665, BE551387, AI268514, AV710503, AI709250, F33691, BF216659, F33502, BE467615, AV738506, BE503802,
HACBD91	13	637482	1 - 1431 15 - 1445	

					<p>AV763934, BG110890, AV742881, AV710956, BF965198, BG033031, T90966, R02459, F32392, BF029956, BF690853, AV764373, BE738142, BF244383, AW72766, BF978393, BF030821, BE548289, N64163, BF576733, AW872492, BE218579, BE539011, BE042987, BF978138, BE217894, BF692527, AW419258, BF219313, BF244019, R02355, BF242775, AA340839, AW440167, F30529, BE748667, AA640120, BG179795, BF679132, BF382290, AT191930, R35603, BF240791, BF691038, AW009337, AA886535, BE738709, AI253328, AW268515, BF977850, H79632, AV764541, BF214426, BE184678, BE171856, BF382191, F12739, BF031722, BE564110, F21702, BF219100, F26311, F27624, F31646, F24066, F30253, F21442, BF030470, BF215493, AA365400, AV725369, BF243623, BF216495, F23622, R38445, Z20180, F23439, BF031636, AA340808, BF246303, F29361, BF212059, D19917, BF210763, AI720401, N58379, AA706899, BE737668, F37786, AC009289.8, BC000855.1, AF044957.1, AC008804.6.</p>
HAGA Q26	14	561996	1 - 1319	15 - 1333	<p>BF111995, BF111899, AW051348, AI807015, AA349378, AA349433, H05458, T39468, T39511, F02812, T50009, T50073, Z43427, AI372659, BE843943, BE843903, AA860404, BG015163, BE938621, BE843892, AI372657, BE698483, BF092079, BE301746, BG015653, AA496848, AL045349, BE047833, BE965724, BE965432, BE875407, BE964497, AW059713, AL037454, BE964512, AL119836, BE967307, AI918408, BG180506, BE964876, BF924856, AI683559, AW151136, BG107576, BE965067, AW268261, AI691088, AI798271, AV689111, BG253692, BE011885, AI868163, AI918634, AW084097, BE875022, BE879931, AI340603, AV728806, AL036652, BF814335, AI370392, BE963838, AV725920, AW021717, AW089036, BE877142, BE964795, AI469516, AI805638, AI925404, AA291456, AL040694, AI285439, AA888196, BE966404, BE965758, BE965355, BE544111, BG180273, AI366968, AW022682, AV742698, AI560679, AI345608, BE967149, AI366959, AI473536, BG153056, BE964614, BE540578, AI349933, AI623736, AW020095, BF038804, BE908276, AV742475, AI345471, BE966787, AI343091, AI345677, BE966011, BE965621, AI340519, AW162189, BF814357, AW198144, AI446809, AV717295, AV716613, AV682144, AI366992, AA806719, AV682099, BE964661, AA789133, BE963918, BE904051, AW023338, AV738730, BE873776, BG027082, BF032404, BG164035, BE613727, BG032219, AI863357, BF965884, AL048323, BG153050, AI636719, AV756658, AW827289, AL048340, BE879905, BG109270, AW020693, AI686576, AW858254, BE964073, AI470293, AW827290, AW058233, AL038605, BG107625, AI702527, BG260037, AW834325, BE047952, BF799031, AA643235, AI418254, AI623905, AI538764, AI524654, AI249946, BE964006, AA848053, AV733819, AA635382, H42825, AI929108, BF924884, BG029053, BE974031, AI473451, AV711509, BG252714, AL048644, BF868927, AL040241, BE883591, BF968622, AW068845, AI624293, BF813196, AW022494, BF340323, AL046463, AW020288, AI521596, AW021373, AW162194, BF915316, BF925370, BF886214, AI923989, BE965481, AI868204, AI242736, BE891942, BE735380, BF909758, AA579232, BG166687, AV715354, BE964767, AV756247, AV758825, BF814449, AL038445, BE965121, AW163834, BF343521, AW084056, BG032169, BE904851, BF868811, BG104782, AI337677, BG122101, AI628325, AI590645, BE875402, AW083804, AI561299, BE908335, AW059828, BF753056, AI559863, AV726125, BF750879, AW265004, F26535, AI583032, BF811808, AI366974, AI355765, BF822127, AI609593, AI887775, AI858865,</p>

					AI500061, BG121959, AA572758, BF699668, AI348897, BE778024, BF814504, AI345224, AI357599, AV681949, T99953, AI589428, BG113851, BG110517, AL530922, AF169301.1, AC091736.1, AL442082.1, AB049853.1, AL389935.1, BC007364.1, S78214.1, X99717.1, AL122121.1, AK027161.1, BC006195.1, BC001418.2, BC005858.1, AK000310.1, S77771.1, AL389939.1, AF090900.1, AF090934.1, BC003104.1, AK025092.1, AK024524.1, AB047897.1, BC007674.1, AB044547.1, AL136789.1, BC004874.1, AL122045.1, AK026506.1, AL389978.1, AL049464.1, AF067420.1, BC007355.1, M86826.1, AB063071.1, AL110196.1, BC001293.1, BC007998.1, BC006287.1, AL096751.1, AL133565.1, AF057300.1, AF057299.1, Y10080.1, BC008387.1, AK026518.1, AL133081.1, AL162006.1, U42031.1, AK027142.1, U51587.1, AF177336.1, AK000137.1, AL157479.1, AL137547.1, AL133093.1, AB063008.1, AK025431.1, AL390167.1, BC008673.1, BC000317.1, AB047869.1, AF205861.1, BC003650.1, AL133560.1, AK024538.1, BC000799.1, AK026480.1, AF218014.1, AL049382.1, AK027182.1, AK000421.1, AK000323.1, S76508.1, BC001774.1, AB051158.1, AB047615.1, AL137523.1, AL353957.1, U58996.2, AB055303.1, Z37987.1, AB060887.1, AK026452.1, BC008025.1, AL050170.1, BC003687.1, AK026395.1, AB060912.1, AL122111.1, AB060863.1, BC005160.1, AB056809.1, AB052191.1, Y14314.1, AK026927.1, AL096744.1, AL137658.1, AL137705.1, AL137292.1, BC000778.1, BC008185.1, S61953.1, AL137283.1, AF097996.1, AL049430.1, AL390154.1, BC006164.1, AL512718.1, AL049314.1, J05032.1, AL117583.1, AB063046.1, AF110640.1, BC001349.1, AF120268.1, AK000212.1, AK000083.1, BC006180.1, AK027164.1, AB047801.1, BC007534.1, BC000556.1, BC004905.1, AL110224.1, BC007021.1, AK026462.1, AL356278.8, AF162270.1, AL050277.1, BC008070.1, AL512684.1, AB047966.1, BC006408.1, AF225424.1, AK000655.1, AB060856.1, AK025573.1, BC001056.1, AB047631.1, BC005890.1, AL137273.1, BC004370.1, AF207829.1, BC002491.1, D83989.1, BC004943.1, AF239683.1, BC005007.1, AF111112.1, AL122049.1, BC009033.1, L19437.2, AK026086.1, AB060883.1, AK026045.1, AB056420.1, AF305835.1, AB060903.1, AK026434.1, AL133568.1, AL122118.1, AL050393.1, AL137476.1, AC023880.5, AL117435.1, AK026534.1, BC000348.1, BC0005678.1, AJ001838.1, S78453.1, AL136767.1, X76228.1, M64349.1, BC005151.1, AB055370.1, AB060893.1, BC001963.1, AF159615.1, AK026603.1, AL512689.1, AL133075.1, BC007680.1, AL136754.1, AK025708.1, AL050146.1, AF217991.1, AL117440.1, BC007897.1, AL136766.1, AL117629.1, BC006133.1, AK000450.1, AK026592.1, AF003737.1, AL050024.1, X69819.1, AB049900.1, AK025958.1, AK025084.1, L30117.1, AL080074.1, AB048974.1, AB063084.1, BC002471.1, BC006411.1, AK025772.1, AF090896.1, AL137488.1, BC000066.1, AK026551.1, U77594.1, BC002777.1, AL353802.14, AF271350.1, BC000632.1, AK026533.1, BC009026.1, BC003683.1, AK027096.1, AK025414.1, AB050411.1, AK027104.1, AK026353.1, BC002541.1, BC004297.1, U39656.1, AK026522.1, AB050534.1, AL136644.1, BC006440.1, AK026885.1, AK026571.1, BC003682.1, AK025541.1, AL136843.1, BC004431.1, AF132730.1, AF219137.1, AL137574.1, AF090886.1, AL136893.1, AK024944.1, AK025015.1, AL050116.1.
HAGDS35	15	135219 9	1 - 737	15 - 751	AI803504, AI261590, AW970422, AA430349, AD17015, AD217649, AI357214, AA425610, AW170513, N21542, AI805514, AA553732, AI922416, AI089295, AI807997, BE549761, BF434916, AI093989,

					<p>AI537981, BE464016, AI128724, AA046439, AW970309, AA211360, AA974447, BE672109, BE466566, AI990335, AI655816, AI479968, AI926934, AI961572, AW970221, AW243397, AA534329, AW593487, AI283132, BF115098, AA256606, AA019380, BF061520, AA936249, AI466563, AA872374, AA011475, H25408, AI393572, AI203429, AI961183, BF735047, AW613954, AI216786, AI798452, H28374, C01415, AW016511, BE551700, AA730296, AI991488, BF476167, AA55164, AA516090, R46342, R43067, R35671, H39555, AA258077, AI950123, Z38679, AI535820, AW887425, AW958078, BE771685, AI382468, AA971129, AA090871, BF971621, AA455366.</p>
HAIJAN23	16	135236 4	1 - 2835	15 - 2849	<p>BF337092, BF968693, AI949422, AL523556, BF798043, AV702522, AI423046, BE883392, BE786755, BG178390, BE408282, N31952, AA465612, AW195192, BE543143, AI564487, AV660395, BE543045, R88931, BE825704, AA658285, AW975104, AI740792, BE002027, BE928231, R89611, BG168885, BF331860, AW590726, AA641596, AA313322, BF358320, AW418507, AW842226, AI949987, AW615497, AW194161, BF222524, BF197303, BF755611, AI869038, AW243485, BF754745, AI367183, BE073382, AW013907, AF310971.1, AF301000.1, AB050049.1, AF261884.1, AC010279.4, AB050050.1, AK025591.1, AL079298.1, Z70695.1.</p>
HAIJBR69	17	638516	1 - 741	15 - 755	<p>BE262907, AW503376, AW503644, BF982382, BE079288, AW504239, AA701415, BF315343, BE277664, BF921555, BF736464, BF756620, BE720223, BE815902, AA490675, BE930704, AW971745, AW804686, AW392670, BE695785, AW861944, AW604723, AW877209, AL119483, U46351, AW858526, AW858525, AL042984, AL119497, AL119324, AL119319, AL119355, AW500561, U46349, AL134538, AL119457, BE705903, BE705906, AW577135, AW372827, AW384394, AW861889, AW858455, AW363220, U46350, Z99396, AL119484, AL119363, AL119391, U46347, U46341, AL119443, BF868687, AL119444, AL119341, BF868697, AW604726, AL119439, BF868684, BE705905, AL119522, AL119396, U46346, AL119335, AL134531, AL134533, AL037205, AL134920, AL134525, BE705904, AL119399, AL043029, AL119496, AL119418, AW861954, U46345, AL043011, AL042614, AL042975, AL043033, AL042544, AL042965, AL134542, AL042450, AL042542, AL043019, AL043003, AL119464, AL042551, AB028986.1, AB026436.1.</p>
HAMFE15	18	905695	1 - 4115	15 - 4129	<p>AL530791, AL530792, AL529741, AL53065, AL53065, AU124538, AU133125, BG248951, BG170992, BF342607, BE791618, BE788808, BE889885, BE899228, BE266316, BF666992, AA604226, BE855814, AA858439, BF306389, AW965351, AI459262, AI949460, BE566846, AI920795, BF695661, AI628581, AI810626, AA213464, BF436958, AI765166, BF131526, AA446901, BE669483, BF105045, AA165298, AW300022, N48825, AA595754, BE218460, BF126313, AA165297, BE044264, AI686706, AW300346, BF760498, AI472286, AI804402, AA426331, AI278834, AW169453, AW239143, AA426332, H29503, AW602873, AA213575, BF376918, AV749783, AA075971, AA447021, AA074072, BE244841, AI002939, BE832901, AA598694, BE694349, AI471852, AI961851, AW136228, AI422999, AA707156, H29787, AV692260, AV692263, BE243932, BE244952, BF330518, AV698872, AA333388, AV698900, AV691373, AV695584, AV694677, AV687965, AV696854, R13303, AA564851, AI762353, BF751566, BE244135, AV690233, AV696838, BE463584, T05291, BF878149, BE258595, N55929, AV698875, BF238880, AA348529, AV689303, T78749, BF736483, BE674953, N89249, N45617.</p>

HAMGR28	19	892971	1 - 1660	15 - 1674	D12186, AW961934, BF208387, AW418929, AW300980, AI522016, R91823, AW293669, W81348, AV649579, N95619, BE503239, AI739123, AK001704.1, AJ278150.1, AC004918.1, AL049792.11, AC010979.3, AC006396.1, AC005692. 1.
					AL519641, AL519640, AL525613, AL526308, AL527643, AL530324, AL525663, AL525671, AL530325, AL515833, AL515832, BF313053, AL527577, BF529163, BE312001, BF984557, BF530620, BE396752, BE304484, BF983145, BE560368, BF316599, BG114646, BE269376, BF313413, BE298748, BE440179, AW953553, BF307907, AW978612, BE617303, AA845426, AI830874, AI983227, AW956917, AW410199, AW628335, BE464326, AA530876, AW452186, BE139083, AI829507, AI356849, W69111, AW084551, AA406233, AI589504, AI970964, AI420766, AI701901, AI130010, AI288363, BF571959, AI683363, BE019516, BE206283, AW272707, N23238, AA593625, AI000296, AA406505, AW593667, AI933020, AI337797, BF691989, AI139514, BF062876, W35301, AI418519, AV759081, AW514035, AW004995, AW591716, F28754, AA815275, AI347528, AI624104, AA574436, AI817434, AI025110, T08849, AL527576, AI079740, AA962799, AA707405, BF445536, F37186, AW207522, AW591663, AW263070, AW510310, AW264517, AA028008, T33149, AA723895, W69236, R40168, T23442, H88132, H78378, AW514039, D12424, W23701, F34521, Z43089, BE646197, AI475064, AA653748, AA312858, AW959275, AW410198, AI932423, AA121114, AA121036, AA295884, AA356831, AI310743, BF513002, AA381766, Z39180, R12971, AW379122, AI768799, BE877018, AI560685, AA338084, AI810799, AW861944, AW750703, F24446, AW972092, AW858525, AW877209, AW968355, AW968356, AW972093, AW968729, AW971740, AW972091, AI431351, AW972090, AW969229, AW858455, AW804686, AL119324, AI432644, AI623302, AW604723, AW858526, AI432647, AI432653, AW081103, AI432661, AI492519, BE672748, BC007438.1, AC004150.8, AF064854.1, AB026436. 1.
HAPOM49	20	769555	1 - 1991	15 - 2005	AL520731, AL520732, BE271092, BE271295, BF111901, AV650049, BF686278, BE840511, BF111645, AI809801, AW168904, AI809806, AW103024, AA933973, AI744944, AI588991, AI033486, AI096548, AA662523, AW468813, AI950317, AI279302, AI096696, BF239172, AW662564, AA417671, AI189300, AI753808, AA235373, AW960081, AI095057, W86920, AW189373, AI361321, BF061913, AI366754, AI218487, AI824959, AI348339, AI032926, AV659024, AA889791, BE243641, AA626261, AI338100, AA417558, W24077, AW974720, N72014, AA894657, N59290, R01247, AA235784, BE929365, BE929364, BE244396, AI275184, AI810247, W24089, R36924, AA356938, N91904, AA508411, AA649828, N91912, N99466, Z24931, H68902, BE782571, BF840140, AC004067.1, AF332892.1, AF306567. 1.
HATBR65	21	635514	1 - 798	15 - 812	AW754098, AV747079, AW964560, BF827304, AI697254, AA826321, AA663880, BF924786, AA772037, AV725414, AA826164, AA663006, AA826322, BE062047, AA835931, AA319870, R95053, AV760830, BF918713, BF959165, AI053538, BF930635, BE828744, AA078591, AF139781, AA491430, AA078183, AW393403, W74390, AW578861, AW393400, AA320812, BF840307, AA078213, AW752269, BF757569, AA077448, BG004304, AW793003, AA047825, AA001509, AA076683, AW857010, BE183669, BE183617, BE699552, AV720211, AW973541, BE932909, AI254770, AI284543,

AI251203, AI249853, AV743864, AI251284, AW276678, AW966385, BF952670, BE707812, AI251034, AI250552, AW970571, AW869794, BE139139, AA609826, AW303098, AA552586, BF952311, AV719632, AV718487, AW905386, BE138387, AV720104, BF952747, AA015737, AW975623, BF129140, AA076784, AA604865, BG222875, AV720729, AA504818, AW905269, AV754716, AW969831, AA501867, BE042006, BF589824, W72324, BF691892, AI954192, AA610381, AA503018, AA747757, H04977, AA904211, AI912401, AI279417, BE968744, AC004084.1, AF030453.1, AC005088.2, AC004951.5, AC018720.5, AC007078.3, AC004980.4, AC007000.2, AC006480.3, AC004878.2, AC006014.2, AC007003.4, AC005488.2, AC005098.2, AC004867.5, AC004166.12, AK021477.1, AC005071.2, AC005236.4, AP000350.1, Z95115.1, AC0073462.8, AC007792.1, X51956.1, Z95331.2, AC022382.3, AC0087071.2, AC005291.1, AL035495.13, AL162424.20, AC002107.1, AC002106.1, Z98884.11, AF168787.1, AL157791.4, Z82215.1, AF172081.1, AC008116.8, AL008729.1, AC018809.4, AC0079141.7, AC011811.42, AC006111.3, AC020558.4, AC007766.1, AL162426.20, AL139317.5, AL390838.26, AL031005.1, AL161779.32, AC004477.1, AC008392.6, AL162615.13, AC009509.7, AC003690.1, U95740.1, AL034372.33, AF196970.1, AF253417.1, AC000062.1, AL109825.23, AC024028.10, AL034553.12, AC003030.1, AL591398.2, AC005899.1, AL034400.2, AC073492.18, AC011473.4, AC005772.1, AL139316.5, AC006487.8, AC011472.7, AP001929.4, AP000963.2, AC072061.8, Z98051.6, AC005327.1, AC007225.2, AL109804.41, AC006057.5, AP001711.1, AL136984.20, AC009506.5, AL139100.9, AC008397.7, AC007199.1, AL137162.25, AF190464.1, AC009247.12, AC025430.5, AC005261.1, AC006357.5, AC005325.1, AL121880.21, AC008395.6, AP000314.1, AL353715.21, AC025166.7, AL049779.6, AL355336.15, AC011479.6, AC011495.6, AL359644.10, AC020904.6, AC004706.1, Z98044.13, AL049874.3, AC007201.1, AL161757.4, AC007130.2, AL139415.10, AC022384.4, AC008738.6, Z95114.19, AC090841.1, AC005378.2, AC022001.3, AL031848.11, AC018494.6, AL445435.11, AC002128.1, AC018811.4, AC007685.2, AL121601.13, AC004805.1, AL353777.18, AL359397.3, AC078818.19, AC007679.4, AP001781.4, AP000563.1, AP000194.1, AC007956.5, AC020633.3, AL021155.1, AC009131.6, AL359236.4, AL391839.9, AL391259.15, AL096701.14, AC008079.23, AC039056.7, AC005256.2, AL353812.13, AC004263.1, AL023553.5, AC008551.5, AC005932.1, AC079602.15, AP000133.1, AP000211.1, AJ011930.1, AL356354.10, AL163300.2, AC007066.4, AC006441.13, AC005586.2, AD000684.1, AC000134.14, AL021878.1, AC002369.1, AL032821.2, AC009510.9, AL096791.12, AC009161.12, Z82208.1, AC008641.6, AC005056.2, AL049869.6, AC023105.7, AL355312.24, AP001718.1, AL136179.15, AL078461.38, AF279660.2, AC004873.3, AC010205.5, AL353692.14, AC013726.7, AP000497.1, AC010530.7, AL133320.8, AD000864.1, Z82214.23, AL356805.5, AP000471.2, AB045360.1, AF001552.1, AL359382.23, AL450465.12, AL354815.10, AC005933.1, AL121754.18, AC018695.6, AC010618.7, AF186190.3, AE006467.1, AC002126.1, AL035681.13, AL354866.10, AC009238.4, AC007240.2, AC020946.4, AC013467.8, AC011449.6, AC004522.1, AC020945.6, AC010605.4, AL035086.12, AL049843.18, AC005231.2, AL136228.8, AL033526.24, AP002456.3, AC008080.1, AF181668.1, AC005800.1, AC011455.6, AC013355. 7.				
---	--	--	--	--

HAUA183	22	639009	1 - 896	15 - 910	<p>BE439675, BF984328, BF978147, AW955502, BF337207, BE272543, AV757236, BE903592, BF212880, AW405217, BE743902, AI991315, AV701663, BE270100, BF681301, BG178791, BE222645, BG167626, BF132414, AW069149, BF238307, AV736544, BG255905, BF698492, BF130460, BF102497, AV745093, BE543668, AI93727, BE254068, AA934591, N24442, AI147316, BF680700, AV705947, BE734398, BG231583, BE256074, AV754408, AW014782, AI198642, BE646408, AA889969, AI709288, AW135010, AA877730, AI720901, AA496681, AA95328, AI032868, AW579254, AI186312, AI969715, AI660672, N23673, AA20567, AA427691, AI188938, AA471213, BG117664, BF102532, AI191317, AI332586, AI219152, AW000829, AI470155, AA843102, AI125390, BE312355, AW182893, AI141484, H93124, AW000718, AI768069, AA815421, AA708211, AA129884, AI023128, AI147588, AV724436, AA159902, AI129253, AA290635, AV706639, AI127280, N58266, AA315771, AI673417, AI587141, AI186000, AI142324, AI128437, AA723220, AI335350, BF687940, AA552070, AI087415, AA995933, AW300769, AA862543, AW008043, R68241, BE349483, AI241459, AI355685, AW304225, AW083014, AI277068, AI038096, AI160884, AA774420, BE407927, AA810159, W37128, W04866, AI828898, AI093015, AA732834, AV707544, AI934627, AA026633, W01678, H84951, AI279658, BF665006, AA419151, AA844949, AI096712, N71609, AV735174, N69652, AA159798, AI969153, AV729015, AA149944, N95063, AI798245, AV736793, AA771923, H20023, R99610, H50207, AA653091, N70496, AW104010, H40779, N33986, D55334, AV743438, AW130386, BF977248, AI125700, BE091971, AA572869, W00449, AI744165, AA157561, AA531221, AI275921, AA969778, H95780, N92248, AI159958, N38815, H20143, AI680770, AA305332, N77862, AV738026, N72206, AA037790, AI752109, AV743648, AA937128, AA962124, AA478395, AV741494, AV740102, H19070, R71518, H18782, R94908, BE621803, R77435, H99652, AA694460, AA641831, H21165, AW511932, AI184349, W38900, AA844297, H46188, W58208, W40195, R71470, N94261, T31343, BE620993, R70469, BE909620, N25251, AI752110, AV741554, AA165011, AA037789, H01343, AA643896, R77524, H23656, R70556, T30654, W37143, AA326924, C01763, R91937, W32075, H60231, R92265, H69010, H67121, H71491, H18688, R09629, H38970, H27857, AA558120, R94992, R09517, H75393, R99715, H23612, AA326929, AA026672, BF436567, H01135, N54428, AA186949, T32463, H59520, AA339137, H39170, AI709334, R86746, N33887, R68534, AA305400, N58289, AI351248, AA410643, AC010422.7, AF151898.1, AF059620.1, BC001192.1, T52716, T61025, T61577, R26656, R79694, H03303, H03402, H18972, H22368, R87112, H60187, H60393, H81427, H84495, N71651, W31583, AA164972, AA188345, AA419096.</p>
HBAMB15	23	671835	1 - 807	15 - 821	<p>W27833, AI860764, AA809619, BF432929, AA768248, AI370876, AV748724, AI291737, H96013, AW051697, AI633038, AI784315, BE546233, BF980899, BF977483, AL138479.4, AL132855.4, AL121755. 23.</p>
HBGBA69	24	135228 9	1 - 967	15 - 981	<p>AI520900, AL520550, AL520551, AL521649, BG029889, AV704088, AW372721, BE264987, BE906201, AL037829, BE782595, AA779652, BF724791, AW372704, AL037830, BG104612, AA722880, N21569, AA478642, AA447813, BE349318, BG254734, AI168324, BE047392, AW131642, AI590628, AA410845, AL520901, AI829611, AA447814, AI359892, AI142945, AA252189, AA974206,</p>

					<p>AI142943, AI190425, BF508776, BE350039, D59872, AI446645, AI335769, AI268764, AI077663, AA776515, AI806892, AI085888, AW083118, AA554318, AI439022, AI373036, AA302641, W73952, N42730, AV683614, AA594115, AA936827, AI249488, AI917956, R66420, AW511599, AW151261, AA861454, AA235619, W77995, W73457, BG164250, W73178, D59873, BE907089, AA678939, BF767379, AA447665, AI050013, H43132, AI367631, AI433148, AI693776, AA156886, BF872750, AI868651, W93317, H42365, AW960535, AA383684, AA843578, AI215882, C21518, AA479185, F21903, AI274524, AI015576, AA421010, AA766077, AA625709, AA535245, AA303411, AW265759, AA339998, AA356903, AA325207, AL044300, AW372719, AA927039, AA401731, AA336082, AA811142, AA433985, AA742390, AA603705, H84185, AA157195, AI910669, AW273621, BG170969, AA916824, AI057210, AI028476, AI582763, AI440289, AA496243, AI721078, AA634528, AI682063, AA621271, AA827896, AA776421, AI051711, AW303838, AI636557, AL044011, AA961201, AA815460, R06079, AI076520, AA773592, BF736165, AA768150, AW170714, BE171275, T24558, AI222486, AI521648.</p>
HBIAE26	25	514418	1 - 1024	15 - 1038	<p>AW237905, AI635440, AL079734, AV729929, H73550, AI669421, BE092488, AC004076.1, AY030284.1, AL139353.3, AC008569.6, AC011479.6, AL031659.9, AC083865.2, AL353807.18, AE006464.1, AL136979.16, AL163032.3, AC019097.5, AC015651.18, Z93023.1, AC011484.4, AC013449.8, AC005015.2, AC006120.1, AC084865.2, AC022116.5, AL512449.6, AL109797.18, AC005736.1, AC006008.2, AL022336.1, AC006329.5, AC002302.1, AL357515.26, AL035669.43, AF288742.1, AC005522.2, AC005840.2, AC021016.4, AC078962.30, AP002851.2, AL138787.11, AP001695.1, AL160269.14, AC005512.1, AL034420.16, AL354932.26, AC005088.2, AC011500.7, AC008666.5, AC010404.5, AC000353.27, AC011469.6, AL139384.16, U91321.1, AC005355.1, AL024498.12, AC008755.6, AC020552.4, AC008641.6, AL356970.21, Z97876.1, AC005046.3, AL022326.1, AC007388.3, AL451075.15, AL390374.16, AC026431.3, AC011497.6, AC009120.8, AC010267.6, AL158207.15, AL590762.1, AL137229.4, AL135978.4, AL133454.6, AC008901.5, AC008752.6, AC002045.1, AC006211.1, AP002982.2, AC002301.1, AC004106.1, AC004089.25, AP001752.1, AL138733.15, AC006449.19, AL121992.24, AC015550.18, AL035420.15, AC067941.7, AC004900.2, AC008786.6, AL109743.4, AL121578.1, AC018639.8, AP002812.3, AL033383.26, AC010913.9, AC024561.4, AC010618.7, AC020916.7, AL157877.11, AC018758.2, AL035071.17, AC002470.17, AC004922.2, AL035422.12, AC006597.2, AC011236.8, AC006480.3, AC007597.3, AL357315.14, AC000360.35, AL353135.32, AC022217.5, AC005531.1, AC008946.6, AC008264.10, AL049539.21, AC008655.6, AL138784.30, AC006538.1, AF129075.2, AL356257.14, AL034417.14, AC008440.8, AC005920.1, AC009131.6, AL121826.11, AC005480.3, AC083871.2, AL139385.12, AC007683.5, AC011452.6, AC008155.9, AP000555.1, AC009470.4, AC005077.5, AF064861.1, AL139809.16, AB003151.1, AL136105.9, AL049776.3, AC008745.6, AL031774.1.</p>
HBINS58	26	135238 6	1 - 829	15 - 843	AI827239, AW104045, AL536345, AL096774. 9.
HBNAW17	27	526797	1 - 587	15 - 601	AA713518, AA807610, AW104604, AA830415, AW975518, AL138824. 19.

HCE2F54	28	634016	1 - 1262	15 - 1276	<p>AL530657, AL534642, AL519887, AL519439, BE257752, AA769913, AI609266, BE674973, AI652143, BG057242, BE046399, AI669608, AU157638, BF347064, BE046435, AL571552, AA406626, AI634414, AW731848, BE245626, AI372990, AW473891, AU153165, AA969877, AI458122, AA402109, AU157487, AI815017, AA936365, AA481847, AI052565, AA704608, AI860561, BE736308, AI591232, AA425187, BF685966, AA479747, AI922541, AA889387, AA992245, R47377, AV694506, AA707462, AA283778, BF589042, AI767815, AW439290, AI354234, AW630387, R82068, BF829195, BG152634, AA29272, BE246763, AI745410, AW074728, AI867440, AA405028, AI652744, AI799388, AW732540, AA724063, AI249812, R43967, BE247615, AA229721, AA290883, AA477093, BF847615, AW117313, AA425298, AW804421, AV661367, AW627358, AA456146, W45494, R82878, R82020, F35061, H01485, AW014040, F25139, AA339640, AI961334, AA478233, AA362857, AA326205, BE244646, AA229827, AA377429, AI186501, BG008599, BE242784, T32225, AV686564, AA688260, AI085847, AV686569, BE157547, AA860204, R08559, F09429, AA05272, BF845336, BF380796, BF380795, AI860044, AA883556, AA032260, AA332516, AA402982, AA332325, BE157532, AA336006, Z39018, AI695855, AI589935, AI583010, AI954634, BF841145, AW469249, F04759, AA032193, F04962, AI524382, BF922668, BE157535, H01586, AI298047, T89862, AI530658, BF883965, BF374266, M78413, BF883968, AW197535, AW952615, BF847600, AW007397, BE157466, AI907687, AI632570, AL519888, AK023173.1, BC007642.1, BC007864. 1.</p>
HCE3G69	29	728432	1 - 2070	15 - 2084	<p>BE740754, BF339727, BE740538, BE277589, BE382940, BE618822, BE793142, BE390135, BF530091, AW969581, BF315345, BF340007, BG164152, BE618316, BE277504, BE740158, BE542020, BF527796, BF796337, BF310510, BE409091, BE545069, BE312476, AI979049, BF314374, AI828148, BF528364, BF341988, AA987262, AA789210, BE783336, AA552222, BE042994, BE408361, AA542834, BE262213, BF724352, BG170449, AA399248, AI399975, AA682879, AA709002, AA628073, AA523036, AI281261, AI749652, AI148325, BE297932, AI347619, AI206709, AI857651, AI304965, R77325, AI523697, AA349818, T16002, H56978, N95160, AA351179, BF736456, BF919187, W16789, R61061, AA994296, BE872104, AW131936, T77786, BF805555, R42239, AI001897, R49103, H27917, AI216183, BF435415, AA349337, AA293132, AA349338, H47705, BF690107, BE090738, BE831416, T87999, R77274, AA017080, AA293765, H47615, W21536, R64334, H56891, BF813356, BF957635, BE827070, AI560786, R64335, T77787, AW380761, AI027520, AW380835, AI870267, AI263580, BE563729, AA324593, AA588228, AW955408, AI277032, R18259, AI566653, T33783, AW883586, D53543, BG105324, AW452975, R60940, H41337, R36021, T32921, BF895461, AI360103, AW380828, BE256741, AA057061, AI564056, AW327298, AI244916, W35216, BE262875, AI040896, BE501695, BE351024, BF058407, BE263311, T15786, AA812926, AA830661, BE693588, AI797886, BF314562, AA299346, AW451523, BF337822, AI520932, D80870, AA333807, AA058540, AW363994, AW604788, AW820702, AW820474, BF848412, BF312802, BE171868, AW604793, AW273608, AA610114, AA865732, AW363958, AA524542, AI089686, AA359625, W23626, D20577, AI150519, W31778, AI150517, AW997867, AV704757, AV706824, AV705873, BC002420.1, AL136758. 1.</p>
HCE5F43	30	612796	1 - 1751	15 - 1765	<p>AL525531, BG034956, BE858832, BE897817, BF510434, BG253874, AI656560, AI628821, BF215392,</p>

HCEFB80	31	114340 7	1 - 2480	15 - 2494	<p>BF244940, AI097077, BG235906, AW954960, AU160122, BF245375, BF977858, AU155177, AI470134, BF224262, AU150756, AU149864, AW473477, AI955730, BF248416, BF448271, BF154789, AI378490, AI800985, AW069497, AI034459, AA156289, AI073518, AI697128, BF030327, AU155857, AA233239, BF102934, AU156440, AI573091, AA135491, BE222305, N447203, BF086535, AI160238, N99672, AU154967, AI963320, AA234550, BF574918, BE930107, AI799196, BF241316, BE928494, AA256954, BF084221, BF084272, N34505, BF086530, AW362473, AA046377, AA251743, AW362472, N79724, BF084201, AV720349, N42280, BF084190, AA251841, AA256955, BF086505, BF086503, N71937, AI167179, AA235408, AA704119, R62459, AA568672, BE28500, AA773818, AA256646, BF094389, AA112337, BF086529, R25715, AA417904, AA256645, AA320096, AA236661, AI525894, BE961214, BF758245, N62776, BF185469, BF511940, AA233163, BF084203, N71943, BF086500, D61858, AW188824, AI563986, BF695980, AL525580, BF086533, AI611807, BF086496, AU136037, BF114811, BE536773, AK023459.1, AF063600.1, AB056410.1, AB050431.1.</p> <p>BF343021, BF339312, BF341481, BF967606, BF344530, BF344213, BF513319, AI393526, BE857064, AW016800, AI937454, AI370995, AW170034, AA416907, AW044650, N75664, BF341415, AW960857, BG222497, AA703765, BE855450, AU146334, AA703342, N64813, T23840, AA446784, AA228781, M86149, T08275, AA386225, AA417008, AI671567, T15689, AW128975, AA432098, H83023, M85314, AI277779, BG222958, BF923571, M79106, BG152559, R13095, R11764, R21361, BF921573, F05369, T28040, T10247, AA323697, AI361427, AW235399, AI352392, T10246, R37689, AW594074, R40527, H82804, N59328, BF894586, R46460, T15861, BE672078, C14288, D25217.2, AF319633.1, AL022327.17.</p>
HCEWE20	32	543370	1 - 871	15 - 885	<p>T51653, AW168798, BG059728, AW151307, AA189081, AL133942, AI924175, AI610776, AI034217, AI479035, BE165748, AI811494, AW090210, AA346162, AW167452, AI687804, AI749571, AA470572, AW089655, AI197934, AI827133, AU144339, N64574, AA470493, AI697247, AI937684, N76274, AI984510, AL047920, AA223830, AA493998, BE176566, AV730063, T62931, BE148908, AA876415, AI801377, AW589501, AA085707, AW177317, AI439860, AI813517, AA581340, AI858607, AA099491, AA613244, AI887321, AA643785, AA633390, AU143906, AV719347, AI362951, W58428, AU146966, AA847621, AI564253, AI921101, AL041417, AA643823, AI567544, AI733077, AW177120, AI561208, AI264673, BE158597, AU145674, AA130536, AA694579, N74502, N54295, AW440317, AF063514, AU119100, AA873103, AW177237, AA160519, AA197059, AW177231, AW177264, AA598786, W49501, AA911409, N26540, BE264670, AL036881, AU146974, AA493751, AW994225, C17730, AA724159, AU145383, AA157033, AA041332, AA168854, IE96719, AA055654, H65500, AA219480, AU148220, AI935333, AL523955, AI132962, AW084901, N48690, AI862874, D29455, AA598990, BE044603, AF074627, AV730577, BG235936, AA878800, R94112, AW275729, AI376984, AI951835, AA101456, AA503213, AW440351, AI735074, AW177266, BE904846, AA846188, AW177226, BE152426, AA493735, AA593081, AW615437, AI538654, AA404968, AW813744, AA669580, F03370, AA350922, AA356989, AI421079, AV728282, AW771706, N76124, AI189033, AA584498, AI961771, AA953572, AV719696, AA467957, H04879, BE159220, T69889, AV720543, H97020, AA467904,</p>

					<p>AW074001, AF285250.1, AC073310.7, AK026100.1, AL030995.1, AL445236.22, AC023160.31, AK027219.1, AC003977.1, AC008945.6, AJ271735.1, AC012172.6, AL161415.2, AL139125.18, AC00217.1, AC023892.35, AL512629.7, AC069228.26, AC011998.8, AP000075.1, AC008651.7, AL133238.3, AL359816.16, AL121694.4, AP000639.4, AC004029.1, AL121757.7, AC002349.1, AC027304.3, AC004397.1, AF003627.2, AC018637.3, AL355615.12, AB038653.1, AC011755.7, AC022468.5, AL133325.20, AL356113.8, AL121986.12, AC004636.1, AL356213.10, AL390023.8, AC008496.5, AC009812.17, AL136374.4, AC007388.3, AC005280.3, AL133404.8, AC012309.7, X14975.1, AL133240.3, AL158069.16, AC011310.3, AL356782.14, AL158055.12, AC010285.4, Z84482.1, AL359950.4, AL034428.4, AC010145.9, AL441887.9, AC003085.1, Z83836.2, AC025420.26, D86996.1, AC007392.3, AC007207.22, AC020717.3, AC022316.18, AP002532.1, AC012323.7, AC026413.5, AL590792.1, AL031387.4, AC022083.6, AL512885.4, AK021525.1, AC005614.1, AC008162.3, AL136170.12, AF248484.1, AL033524.11, AC079175.24, AC007051.3, AF127577.2, AC016396.5, AL132715.3, AL359398.2, AP000626.5, AC073095.3, AL353580.7, AL354758.14, AJ251973.1, AL034545.1, AC004551.1, AC068812.13, AP001669.1, AL590404.5, AC010276.6, Z73497.1, AC013355.7, AL031775.1, AL049570.11, AL590387.7, AC008518.3, AC003670.1, AL160236.4, Z95114.19, AC025212.5, AC017060.7, AL031224.1, AF127936.2, AC004703.1, AC018641.3, AC009037.6, Z81007.1, AL365179.30, AL031321.1, AL158841.6, AC007917.15, AL031320.6, AC005730.1, AL049589.15, AL121775.3, AC004692.1, AC007671.7, AC012531.11, AC003686.1, AL121833.10, AC003687.1, AL138807.12, AL136382.6, AC011752.2, AL445246.4, AB045358.1, AL356108.12, AC005157.1, AC017088.8, AC006004.1, AL450333.13, AL031119.1, AC004998.2, AC073141.4, AC003961.1, AL133211.9, AL445239.8, AL356005.9, AL133462.23, AFI70702.1, AC005250.1, AL159990.12, AC087083.2, AC026351.28, AL159976.9, AL034407.1, AC003666.1, AL137016.11, AC017099.11, AC003955.1, AC063951.22, AC008038.1, AK021760.1, AL023773.1, AFI28525.2, AC024057.4, AC087187.1, AC010411.6, AL392166.19, AL163207.2, AC007907.2, Z98036.1, AC087258.14, AC007502.5, AK024101.1, AL035671.5, AC019197.7, AC007870.3, AF303386.1, AL161426.7, AL132639.4, AL512363.11, AC068723.5, AC020637.9, AL360294.11, AC010365.5, AL354943.9, AL445468.8, AL109854.10, AC004070.1, AC004650.1, AC073130.3, AC026214.3, AC087092.1, AC005747.1, AC006365.4, AL034417.14, AC010583.5, AL109742.12, AC013602.4, U96409.1, AC009225.3, AC008561.4, AP002448.3, AP000457.3, AFI28894.1, AC008083.23, AL359704.9, AL118519.25, AC010632.6, AL160397.17, AC007631.3, AL157791.4, AC018696.4, AC004043.1, AC000126.1, AL445310.9, AL049177.5, AL162414.11, AL512348.8, AC004825.2, AL161938.6, AL355381.11, AL355852.23, AC007551.1, AL136315.9, AP002982.2, AL356311.6, AL161804.4, AC018833.3, AC079631.16, AL360270.18, AC020905.8, AL117381.32, AC007001.2, AL136129.23, AL109942.13, AL109656.10, AL157933.19, AB043547.1, AL390237.9, AC025519.10, AL359197.20, AC005284.1, AP001331.1, AL391495.16, AL451146.7, AL035494.8, AL353788.33, AL163953.3, AC004189.1.</p>
HCGMD59	33	636078	1 - 776	15 - 790	<p>AI346379, AW009453, AA477432, AA152289, BE219294, T27069, AI745607, AW852105, AI807602,</p>

HCNDR47	34	101691 9	1 - 1329	15 - 1343	<p>AA234651, AA024744, BE219304, AA065244, N91858, AI242569, AI091032, BF977615, AI251849, H88431, BE301616, N50522, BE762367, AW607675, F03857, H41152, BE696404, R45373, BE070278, H88369, AL039156, AU133046, AL038837, AL039074, AL039564, AL039109, AL039108, AL037051, AL038531, AL039659, AL039625, AL039648, AL039629, AL039678, AL039150, AL039128, AL037726, T79771, AL040992, AL036725, AL045337, AL042909, AL039423, H53427, AL039410, AL045353, AL037526, AL036973, AL044407, AL039538, AL039386, AL044530, AL036196, AL039924, AL039366, AL039509, AL038025, AL039085, AL037639, AL038821, AL036767, AL043423, AL045341, AL037615, AV743601, H53426, AL043422, AV746102, T24119, T24112, AW975143, AV758878, AL036238, AL043441, AL036117, AL043445, AW013814, AV718844, Z99396, AV738934, AL045794, N91869, AV737584, AW973101, BF294063, BF508972, AV743654, AL036924, AW975229, AW979144, AI535983, AV717989, AV717980, AW451070, AV701782, AV718018, AV717988, AV731085, AW973200, AV701012, AV718016, AV717959, AV717984, AW064110, AV718023, AI002696, H00069, AW607606, AV735727, AV717963, AV717962, AV720464, AL036733, AV745724, AV701118, AV717966, AV745723, AV718002, AV719000, AV700229, AV699447, AV745917, AV745080, AV717956, AV717960, AL036679, AV718858, AL037027, AV745350, T23947, AW975161, AL038851, AV717983, AL037054, AV701017, AV718681, AL037082, AW976625, AL036765, AW975163, AV717965, AL036418, AL036190, AV717941, AV740535, AV701043, AV701163, AV742995, AV701154, AV719568, AV717970, AV745392, AV717978, AL036158, AL037177, AW975203, AV717990, AV722801, AV742720, AI174488, AI634005, AW973189, AW975925, AL037021, AV717942, AV717955, AV717992, AW969322, AW979228, AW970679, T02921, AV745488, AL036191, AV717968, R47228, AV701261, AV743008, AV746162, AV717972, AW975312, AW969383, AA150231, AL036964, AL037085, AV718006, AL036998, AL036133, BF438013, AV741012, AV718010, AV717945, AV718021, AV717971, AW979128, AV717964, AV724520, AJ293456, AW973190, AV718020, AW975607, AV723927, AV744768, AV746335, AL036858, AW452756, AV717961, AV718001, AI535783, AL037178, BF509207, AV742667, AV717986, AV717949, AV718008, AV745369, AV717985, AV717946, AV717958, AV717967, AL037643, AV701166, AV741888, AL037047, AW979252, AV717974, AL036163, AW971000, AW063533, AV720607, AV744770, AV718017, AV717993, AV718013, AW972784, AA961091, AW681208, AV701332, AV742001, AK000326.1, AL139286.13, AF093097.1, AF271371.1, Z96142.1, X73004.1, AJ244003.1, AJ244004.1, AJ244005.1, Y11926.1, D14548.1, Y11923.1, D34614.1, L27636.1, S83538.1, M32676.1, S65373.1, S78798.1, X73003.1, Y11920.1, S85459.1, X92518.1, U50871.1, AB026436.1, D61405.1, T87293, H41179.</p> <p>AI621217, BF222897, AA632651, AI950250, AW139452, AW207039, AA505117, U69203, AI949187, AW953975, AI160725, BE348367, AI631345, AA707909, AA535510, BG059719, AI680791, AI700776, HI7406, AA524577, AA062981, AA365529, H16756, AI699070, AW970783, BE858688, AI696027, BF766585, AV709230, BE220337, AW194354, AA365530, AA678861, BE707377, AL122003.17, AB007895. 1.</p>
HCNSM70	35	637547	1 - 1075	15 - 1089	<p>AW170355, BF437750, AA781956, AA304933, BG260457, H48606, AW517161, AA088807, BE004003.</p>

[illegible]

					AK026600.1, BC006525.1, AL110225.1, AL133606.1, BC008983.1, AK026464.1, X82434.1, BC005890.1, AK026086.1, BC002839.1, AB055374.1, AL136540.1, AB055368.1, AL512765.1, AF056191.1, AL512754.1, AK026592.1, AK000137.1, AK025414.1, AB056420.1, AL096744.1, AF162270.1, AK026855.1, AF057300.1, AF057299.1, AL136749.1, AL133067.1, AL122049.1, AB063008.1, AB048974.1, AL162006.1, AL512746.1, AK026630.1, AL110221.1, AL117457.1, AL133016.1, AK025772.1, AL050108.1, AL122093.1, AF230496.1, AL512750.1, AK026526.1, AK026480.1, BC002643.1, AL117583.1, AJ242859.1, AK026927.1, BC007199.1, AL080060.1, AK026528.1, AK026629.1, U39656.1, AB060916.1, AK026462.1, AF146568.1, X98834.1, AF285167.1, AK000652.1, AB060912.1, AF090934.1, BC008070.1, AB060826.1, AB048953.1, AK026597.1, AB063070.1, AK000445.1, AK026642.1, AL137271.1, BC005168.1, BC004951.1, AK026744.1, Z82022.1, AF217987.1, AK027204.1, AL359618.1, AB060852.1, AL080127.1, AF090900.1, AF090903.1, AL049464.1, AK025524.1, AL137533.1, AF111847.1, AL353940.1, BC004556.1, AF090901.1, AB062978.1, AL136787.1, BC008387.1, AJ012755.1, AK026865.1, AF097996.1, AL133093.1, AF051325.1, AB047615.1, AK025958.1, AK026506.1, AL080074.1, AF113222.1, AK025312.1, AK026452.1, AL050116.1, AK025254.1, BC007021.1, AL442072.1, AL137527.1, AF106862.1, AL136805.1, X53587.1, AL136928.1, AL049466.1, AF353396.1, BC003683.1, AL137478.1, AK025906.1, BC001967.1, AB047904.1, AL359596.1, AB063046.1, AL137459.1, AK026762.1, AL117460.1, AK025798.1, AL133075.1, AL136789.1, AL117440.1, AK000391.1, AL050277.1, AL117432.1, AL049452.1, AL049283.1, AK026353.1, AK025209.1, AL133098.1, AB055366.1, BC001045.1, AB048975.1, BC003687.1, AB055361.1, AL133113.1, AB056768.1, AL117435.1, X65873.1, AL133565.1, U91329.1, AL080124.1, AL162083.1, AK026583.1, AL390154.1, BC008417.1, AL137560.1, AL133640.1, AK025084.1, AB048954.1, AL136635.1, AK025092.1, AB062938.1, BC002733.1, AL136768.1, AF262032.1, AF090896.1, AL136845.1, AL136892.1, AL137521.1, BC008365.1, BC009341.1, AF061943.1, AL122110.1, AL359941.1, AK027096.1, AL512684.1, AL110196.1, AF217966.1, AL133080.1, AB051158.1, AK000432.1, AL162003.1, AB050510.1.
HCUIM65	36	550208	1 - 861	15 - 875	BE781101, BE540200, AI972511, BE300952, AA464837, BG150212, AI681901, AW172458, AA099207, AW205564, AW408650, AW205714, AA450308, AA636047, AI656442, BF437116, BE466112, AW575656, AW962721, AW206882, AA099221, AI620473, AA369585, AW469939, AW136836, BE547752, AI638262, BF059133, AA236642, BE551958, AW086133, AI917742, AI623315, AC005391.1, AL445584. 16.
HCWDS72	37	707833	1 - 306	15 - 320	AW504485, AI380617, AW805539, AV758903, AL079734, AA916430, AW819125, AV762982, AI625604, AI792575, AW084445, AW975210, BE138594, AW069227, AW023111, AV764259, AI792521, BE501593, AW021583, AI890324, BF725844, AW438542, BE138509, AV763026, AV763058, AA904275, AI521525, AA665330, BE077105, AA501461, AW969743, AW327591, AA535216, R94326, BF589824, AA574442, AW338179, AW271904, AI279417, AA651639, AI859946, AA524616, AW020150, AA833896, AV761862, AL042373, BE968744, AW004884, BF528591, AV760019,
HCWK15	38	553621	1 - 696	15 - 710	

AA610509, AU131037, BF804385, AA833875, BF725761, AI053688, AI923052, AV761714, AI821714, AI792133, AI791913, AA013168, TT4524, AI355246, AW474168, AI284543, BF724838, AI912401, AW068596, AV762633, AI564209, AW975626, AI620992, AI821785, AA483606, AV756220, AV754716, AA531176, BG236628, AI491765, H05940, BE139139, AA504906, AI250552, AA019973, BE049032, AA223174, AI798449, AA507040, BF965775, AI022238.1, AC006329.5, AI359402.3, Z98304.1, AC006948.4, Z84487.2, AC006312.8, AC026749.5, AC010627.5, AC008623.4, AC016656.5, AC016652.5, AC005531.1, AC004675.1, AC006057.5, AL033383.26, AI132768.15, AF088219.1, AC004849.1, AL031904.1, AC079177.21, AC007318.4, AL033569.22, AC074013.5, AC005829.1, AL035252.5, AL590762.1, AC005668.1, AC007216.2, U95742.1, AC005480.3, AF196969.1, AL158207.15, AC078846.2, AL121655.1, AC008754.8, AC011443.6, AC007191.1, AC008747.5, AL445217.3, AL161911.17, AC006515.7, AL034449.1, AJ010597.1, AL031659.9, AC008891.7, AC016543.6, AL109628.5, AC009509.7, AB038653.1, AJ400877.1, AF317635.1, AL160165.17, AC004106.1, AC004893.1, AL049776.3, AL121753.30, AC002553.1, AL132777.4, AC010530.7, AC005911.6, AL050349.27, AL158830.17, AP002815.3, AP001727.1, Z79996.2, AC035455.30, AL033529.25, AC087071.2, AC009501.3, AC007570.23, AL137229.4, AC004084.1, AC005746.1, AF314058.1, AP001717.1, AL1365364.19, AC010463.6, AC004906.3, AC008044.4, AC022415.5, AC008848.7, AB001523.1, AC005387.1, AC007565.1, AC020904.6, AC091529.1, AC002316.1, AF283320.1, AL13163.2, AC026172.3, AL356113.8, AC005079.6, AL163210.2, AP001725.1, AF348209.1, AC002369.1, AC008784.6, AL161937.13, AC011481.4, AL354735.14, AC008622.5, AF111167.2, AC011890.4, AC006449.19, AL352978.6, L78833.1, AL096761.1, AC004593.1, AL096701.14, AL136300.22, AL121949.13, AL031432.1, AP001561.4, AC013355.7, AC090958.1, AL133153.3, AC005837.1, L47234.1, AC004448.2, AP000500.1, AC005840.2, Z95114.19, AJ011930.1, AL359091.10, AL163300.2, AC003101.1, AL139415.10, AC011485.6, AC007738.2, AC005225.2, AC002477.1, AC012306.11, AL035413.19, AC006146.2, AL109798.19, AL512347.14, AL109925.11, AC008762.6, AL355543.13, AC022468.5, AL162252.17, AP001753.1, AL121905.23, AC005283.2, Z98742.5, AL137145.13, AC006126.1, AL136039.4, AC003070.1, Z82244.1, AP000088.1, AC005792.1, AC02540.7, AC010583.5, AC090949.1, AL158196.24, AC011495.6, AL354932.26, AC024028.10, AL031846.2, AC087590.1, AC018663.3, AC009269.6, AL159156.15, AC006064.9, AL136296.3, AC011472.7, AF196779.1, AC018663.3, AC009269.6, AL138720.19, AC007685.2, AC011479.6, AL139082.18, AL132712.4, AL079341.19, AC006274.1, AL136526.27, AL117692.5, AC006028.3, AL139041.17, AC004019.20, AC020550.4, AC009623.6, AC005529.7, AC003681.1, AC004882.2, AC004840.3, AC022150.5, AC018673.4, AL161799.19, AL359704.9, AL138680.15, AC011450.4, AC005578.1, AL136303.15, AL133465.30, Y14768.1, AF165926.2, AC011461.4, AC000052.16, AC025165.27, AC002310.1, AP000343.1, AF129756.1, AC007021.3, AL133245.2, AC005089.2, AC007597.3, AL022163.1, AF168787.1, AC074295.7, AP00052.1, AP000505.1, AL031587.3, AF243527.1, AL138836.15, AL353807.18, AL139232.13, AP00065.1, AC016894.7, AC018636.4, AC083884.6, AL139317.5, AL021546.1, AL136179.15, Z99716.4, AL049643.12, AL022336.1.		
---	--	--

HDHEB60	39	499233	1 - 1407	15 - 1421	<p>AC008372.6, AP001169.1, AC018696.4, AC007263.4, AP001747.1, AC007679.4, AC006455.2, AL133448.4, AC009412.6, AC004491.1, AC073897.6, AC007055.3, AC004655.1, AP000215.1, AC004998.2, AC002350.1, AC012309. 7.</p> <p>AL524364, AL527936, BE729676, BE734215, BG034535, BE879791, BG030700, BE782405, BG031399, BF219970, AW961043, AW245732, BE540977, BF125197, BE264862, BE264047, AA523441, BF348672, BF125434, AW250195, AW860381, AW246993, AL654715, AW168308, AI949310, AW068175, BE259690, AI393119, AW938768, BE279977, AW938746, BE857719, AW190234, AI871661, AA494392, AW900867, AA338903, BG006350, AL527587, BF091980, AA602247, BF804618, AW364083, AA357684, AW178944, R40832, BF374357, AW662637, AL524365, R42008, C20713, BF360339, BF915537, AW088134, BG035330, AI800433, AI599667, AI800453, AI536557, BE907440, AI689463, AI922091, AW151132, BF529043, AI285417, AI804505, AI952433, BF914091, AW118557, AI926593, AW151136, AI498579, AI539771, BE897632, AI432644, BG254284, BF304748, AI537677, AI494201, BF812963, AI500659, BG180468, BE883391, AI866881, AI866465, AI815232, AI866691, AI801325, BF812438, AI500523, AI538850, AW089221, BE968552, BE885490, AI887775, AI582932, AI590043, AI284517, AI923989, AI872423, AW172981, AI500706, AI445237, AI491776, AI289791, AW151138, BF811804, AI521560, AI889189, AI500662, AI582912, AW172723, AI284509, AI539800, AI889168, AI440263, AI538885, AI927233, AI866573, AI633493, AI434256, AI866469, AI434242, AI805769, AI888661, AI284513, AI500714, AI888118, AI277008, AI285439, AI436429, AI859991, BE964045, AI355779, AI623736, AI889147, AI371228, AI581033, AI431307, AI440252, AI491710, AI440238, AI047422, AI866786, AI567971, AI610557, AI860003, AI431316, AI242736, AI539260, AI828574, AI887499, AW151979, AL038575, AI539781, AI702065, AI539707, AI885949, AI285419, AW089557, AI559957, AI521571, AI469775, AI866581, AL047398, AW074057, AI815150, AI567953, AI446495, BE906230, AI867068, AI225248, AI698352, AI815239, AI371229, AI921420, AI624279, BF913616, BG252929, AI701890, AI687614, AA464646, BF038804, AI919345, AW858243, AI282249, AI962040, AI829330, AW078839, BE895765, AI554821, AI561170, BE764656, AI636811, AI515375, AI500146, AL042365, AW059765, AI263331, AI610756, AI440260, AI690946, BF814072, AI890907, BF811802, AW129310, AI866458, AI431238, BF815930, AI648567, BF925348, AI514069, BE540578, AA830821, AI924051, AI433157, BE964497, AI273179, BE621206, BG108452, AI371251, AI866510, AI499986, BE968711, AW151974, AW073697, AI866461, AI923046, BF339011, AI049859, BF752892, AI436458, BF526393, AI379711, AI918408, AI334445, AW169643, AI048403, AI915201, AA878808, BF764538, AI349814, AI953880, AI702902, AI800171, BE881675, AI819663, AI432656, AF118240.1, AB016531.1, BC000467.1, BC004356.1, BC000632.1, AK025906.1, BC004937.1, AK027081.1, BC007634.1, AL133070.1, X79204.1, AK000247.1, BC004908.1, AL080162.1, AL136781.1, AF017790.1, Z22828.1, U92992.1, BC002356.1, BC008382.1, BC001093.1, AL080127.1, AL136748.1, BC008195.1, AB048910.1, BC000713.1, AK024550.1, BC008818.1, BC001470.1, AK027116.1, AL133084.1, BC008488.1, AB063077.1, AL137275.1, AF056191.1, AK026086.1, BC004370.1, AB047609.1, BC003105.1, BC006164.1, BC002485.1, AL122098.1, AF111847.1, BC008893.1, M92439.1, AF001343.1,</p>
---------	----	--------	----------	-----------	--

HDPBA28	40	106278 3	1 - 3433	15 - 3447	AL512454.6, BC002839.1, AK026038.1, AJ004832.1, X72889.1, BC002491.1, AK026865.1, AK026021.1, AK025084.1, AK025958.1, BC002607.1, AL136825.1, AL133049.1, BC001790.1, BC000785.1, AB060905.1, AL161953.1, AL136765.1, S7771.1, BC004926.1, AL137429.1, BC006207.1, AL389978.1, BC006508.1, AF067420.1, AK026642.1, AK026590.1, BC007657.1, AF7260566.1, AB063087.1, BC002844.1, AF369701.1, BC004181.1, AL117432.1, BC000051.1, BC000386.1, BC000785.1, AK026749.1, AF151109.1, BC005805.1, AK026164.1, AB049629.1, AK025092.1, BC008717.1, AK026627.1, AL161802.15, AL353745.7, BC008365.1, D83989.1, U80742.1, AK026648.1, BC007207.1, BC002495.1, BC009272.1, AL136763.1, AL137556.1, AL136540.1, BC002777.1, AL080154.1, AK026532.1, BC009284.1, AC004690.1, AK026389.1, AF353396.1, AF022813.1, BC001328.1, BC002816.1, AL049423.1, AL049314.1, AB060837.1, AL512705.1, BC002524.1, AL137536.1, AK025541.1, AF036268.1, AL080126.1, AL389935.1, AK026631.1, AC044797.5, AK026422.1, BC009212.1, BC005007.1, S61953.1, AB019565.1, Y10080.1, AK025391.1, AK000432.1, AK026522.1, BC004265.1, AK026541.1, AK027161.1, AB047941.1, AL157464.1, AK026793.1, AB060929.1, BC008785.1, AK025431.1, AK026603.1, AB060839.1, AK027142.1, AL137656.1, AL133565.1, AL137665.1, AJ406932.1, AC003032.1, AC005057.2, AC010137.3, AL353802.14, AC005968.1, AL157360.8, AL162713.19, AL359997.8, AC007298.17, AL133629.1, BC006332.1, BC003687.1, AF030165.1, AL122100.1, AL133053.1, BC002476.1, BC000066.1, BC003122.1, BC006133.1, Y00093.1, AF002985.1, AB055805.1, AL122049.1, BC009395.1, BC002519.1, D44497.1, BC000377.1, BC001963.1, BC001191.1, AB060226.1, AL137557.1, AK000655.1, AF218023.1, AL162062.1, AK027188.1, AF188698.1, BC006412.1, AF218034.1, BC006465.1, S76508.1, AK027868.1, AC021020.3, AL080158.1, BC000317.1, BC005854.1, BC008025.1, U67211.1, AL050138.1, X99226.1, U77594.1, BC001082.1, AL110159.1, AF169154.1, AF271350.1, AL080060.1, AL136884.1, AK027114.1, BC002647.1, AB050418.1, AK025209.1, AB049758.1, BC004119.1, AL157431.1, AL137660.1, BC008078.1, AB056768.1, AL080129.1, AL110222.1, AL136882.1, AF205073.1, U51587.1, AL135933.11, AL157878.11, X66417.1, AL035458.35, BC006487.1, BC006147.1, BC003651.1, AF358829.1, BC007280.1, AK000445.1, AK026571.1, AL512746.1, BC002386.1, BC006198.1, S69510.1, AF112208.1, AF124728.1, AL162085.1, AF321617.1, AL137662.1, AL137480.1, Z94277.1, AC006222.1, AC010088.3, BC001427.1, AK026591.1, BC004960.1, AK000450.1.
					T27258, AU140225, AI634860, AI767588, BE536545, AV689583, AI991689, AI635347, BE386012, BE767008, AW976840, AI640606, BE178142, BE177971, AW502888, AA977785, AI979247, AW503911, AA971157, AL135446, T27536, AA491080, W74279, R07065, AI687230, T27535, AW816221, AA436906, BE151455, BF510035, BF803181, BE151443, AA152394, AW505067, BG003144, AA761110, AA377229, AV648450, BE671931, AI873792, AA397568, AA399529, AA679080, AI382296, AV648107, AV648212, BE648537, AI913234, AI741350, R50230, AI920850, AI018184, AA702114, AI244588, R81654, AI126673, AA152500, BG057181, AA148355, BE817269, AF222340.1, AF183569.1, AF106037.1, AB011097.1, AC008906.5, AC009073.8.
HDPCL63	41	101900	1 - 3023	15 - 3037	AL040501, AL040502, BF312113, BF311401, BF312099, BF969955, BG118304, BE889750, BF528529,

8	42	460682	1 - 753	15 - 767	15 - 1057	BE892499, BE378197, BE796737, BE312325, AL043139, BG033292, BE314857, BE312562, AW961051, BE875599, BE395864, BF528758, BF312036, BF982580, BF511000, BF206591, BF689722, BE278785, BE301032, BE538635, BF062495, AI074169, BF063302, BF528817, BE550763, AI439151, BF568696, AA143267, BE044341, AA534289, AI968616, BE064484, AI374815, AA025730, AI718363, AA984833, BE893882, AW084880, AW952114, BG012441, AA722825, AA514696, AI809529, BF835155, BF892650, AA932271, BF739765, BF894752, BG059761, AI134803, AI828209, AA460484, AI042088, AA134802, AI640382, R51678, AI925709, AI669079, AW469179, AI199232, BF900427, R53751, BF349740, BE279833, BE273231, AI640403, AI074545, BF753080, AW579547, BE731727, AI659329, AW002463, AA233548, AI003456, BG222370, AW137214, AA230095, T55772, AW263568, AA233779, BF001788, AI670726, AA626289, BF910860, AV748998, AW276888, AA323567, AA233662, Z45129, H45702, BE245940, BE383639, R40971, R53750, AA037073, T03319, BF813413, BE074131, BF691850, BE244555, BE146067, BF924555, BF244566, AI141636, AA339051, H45753, BF691075, BF690883, H42344, AA291701, AI884572, AA356368, AW080418, AW071165, AW296941, AA631213, AA317597, R39383, AA324321, BE244793, BF221497, AI278324, BF977743, AA025729, BF055230, R10660, AA429477, AI468432, AA291748, AI537969, H52665, U46451, AI979165, BF570791, AA378387, AI918383, BF923133, AA455817, AW103386, BF868375, BF868370, AA922522, BF977581, R38308, Z39044, R51590, BF737690, BF976877, R12982, F04029, AI868824, T55772, AW263568, AA233779, R14452, T31372, AA292264, AA287135, AI560594, BF691578, AV743961, AA284706, BF894453, Z42923, AW152063, AI916442, BE694236, AA338803, BE049333, BE904088, T32117, BF933303, BE889979, BF914434, BF894452, BF764158, BE708005, BE892537, T92457, BF811804, BF994428, AI440263, BG167249, AI866465, AI828574, AI623736, AL513907, AW151136, AI539771, BE897632, AI537677, AI494201, AL513817, BF812963, AI500659, AI815232, AI801325, AI500523, AI538850, AI582932, AI923989, AI284517, AI872423, AI500706, AI445237, AI491776, AW151138, AI889189, AI521560, AI500662, AI866786, AW172723, AI284509, AI539800, AI538885, AI889168, AI866573, AI633493, AI434256, AI866469, AI805769, AI434242, AI888661, AI284513, AI500714, AI888118, AL096879.1, AL117649.1, AL021977.10, AL020993.1, BC004310.1, AL049426.1, AC004213.1, AL133070.1, AL136781.1, AL110196.1, AL136862.1, Z98744.1, AL136763.1, AL133049.1, AL110199.1, AL137523.1, AC069387.8, AL122049.1, AL049423.1, AL133080.1, AF132495.2, AL133084.1, AL133655.1, AL136765.1, AL050116.1, AL136825.1, AF090943.1, AF271350.1, AF002985.1, L40386.1, AL133607.1, AL080234.1, AL133015.1, BC002695.1, BC008904.1, AL133053.1, AK000645.1, BC008723.1, AB060917.1, AL136747.1, AB031069.1, AB063100.1, AL162062.1, AC007383.4, AL512733.1, BC008387.1, AL162272.10, S77771.1, AK027116.1, AB060842.1, AL050155.1, AK026480.1, AB046642.1, AL022723.4, AL133608.1, AL133072.1, AC008755.6, AL122110.1, AB048994.1, AK026086.1, AL122050.1, BC003591.1, AK025099.1, AB063077.1, AL133077.1, AF081195.1, AA443486.
	43	628254	1 - 1043	15 - 1057	15 - 1057	AI193249, AI809829, AW575379, AA769318, AI796662, BG029535, AW269780, AA809133, AA427866, AW953923,

AI419264, AW088714, AI400326, BF945261, AI924874, AI150755, AI623762, AI239506, AI619494, AW148696, AI797909, BE327745, AI634907, AW070513, AI186243, AI768972, AA804195, AW674541, BE221186, AW204520, AA292638, AA235326, AW341643, AI005076, AW004816, AW603880, AW007235, AI871816, BE826643, BF222941, BE826639, BE826634, AA292639, BE826687, AW514133, AA627727, AI690331, T05561, AW405407, AI673409, BF814220, AW075831, AI923685, AA931499, H56443, AW083896, BG165971, H56444, H16157, T82850, AW131313, AI249783, AA714383, AA548622, AI810663, BF091047, AA810885, R51826, F21597, AA702095, AI832872, AA832395, BF974513, T34785, AA524210, T16401, T90272, R28256, BE826642, AA262993, BF903485, AA568882, AW075840, AA535317, AI909659, R28033, BF814542, AW970732, AI810273, AI262373, BF000060, AI927452, AI679783, AI272283, BF901241, BE559850, AA742649, BF900830, AA922242, AI439758, AI445719, AI738794, AI625812, AI215105, AA749066, AI275641, BG054585, AA527826, BE143233, AA525108, AI950316, AI522808, BG111850, AA643261, AI432644, AI927233, BF771135, AA033725, AI699011, BE883591, AI431307, BG110517, BG113493, BG029667, AI433157, AI648567, AI690946, AI554821, BG252929, AW151136, AI539771, BE897632, AI537677, AI494201, BF812963, AI500659, AI866465, AI815232, AI801325, AI500523, AI538850, AI887775, AI582932, AI590043, AI872423, AI284517, AI923989, AI500706, AI445237, AI491776, AW151138, BF811804, AI932949, AI521560, AI889189, AI500662, AI539800, AI582912, AW172723, AI284509, AI538885, AI889168, AI440263, AI866573, AI633493, AI434256, AI866469, AI434242, AI805769, AI888661, AI500714, AI284513, AI888118, AI285439, AI859991, AI436429, AI355779, AI623736, AI889147, AI871228, AI581033, AI491710, AI440252, AI866786, AI610557, AI860003, AI242736, AI828574, AI887499, AW151979, AI539781, AI539707, AI702065, AI885949, AW089557, AI559957, AI285419, AI521571, AI469775, AI866581, AI815150, AI367953, AI446495, AW858243, BG164558, AA806719, BE885490, AI289791, BF811802, AI110306, AI929108, BG257535, BG027628, BF338002, AI045500, AI866820, AI042515, AI561170, BE886728, AI784028, AI890907, AI039390, BF795712, BE895765, BF815930, AI468872, BF802671, AW089006, BF812438, BG260144, AI371251, AI079960, AI866510, BE047852, AI274759, AI866461, AI923046, AI565172, AI047422, AI431316, AI048403, BG168086, AW827227, AA074168, AI433976, AI867068, BG113224, BF725463, BE537531, X79568.1, U28282.1, AK027136.1, AC007383.4, BC006408.1, AB060841.1, AL110280.1, AC026464.6, AL133049.1, AL137294.1, AC023880.5, BC006159.1, BC004431.1, BC008078.1, AC010149.8, AK025209.1, AK026793.1, AL080124.1, AL389935.1, AL137271.1, AC006994.4, AC021325.5, U72621.3, AC016652.5, AL359620.1, AL035458.35, AL133014.1, AF012536.1, BC008417.1, BC001844.1, AL137538.1, AC004987.2, U77594.1, AC008592.4, BC006136.1, AL136843.1, AC011450.4, AL353625.5, AF090900.1, AK026626.1, AC018643.3, BC007998.1, AL137705.1, AB060826.1, AL080234.1, AK026894.1, BC002355.1, AL390154.1, AL136766.1, AL137292.1, AC009087.4, BC008708.1, AL137530.1, BC008280.1, AK027160.1, AF095901.1, AL133444.28, AL353999.3, AC004822.1, BC009395.1, BC002473.1, AL136845.1, AB060888.1, AB060229.1, AK000432.1, AC004686.1, S7777.1, AL353802.14, BC006509.1, AF334404.1, BC009026.1, AL355834.4, AL353594.13, AP001873.3, AL356278.8,				
--	--	--	--	--

					AK027217.1, AK025632.1, AK024546.1, AL133104.1, AC005902.7, AK000655.1, AK024747.1, BC000714.1, AK000647.1, AK025484.1, AF056191.1, AF348209.1, AK027161.1, AF120268.1, BC009355.1, AK000391.1, AC006313.1, AL122049.1, AF353396.1, AB063070.1, AK025015.1, AB047631.1, AF179633.1, BC004215.1, BC004908.1, AB056768.1, AK025465.1, AL137665.1, AB060842.1, AL391244.1, AK000450.1, AL512684.1, AB049900.1, AK009484.3, Z82022.1, AF218006.1, BC002343.1, BC006494.1, AK000250.1, AL136768.1, AK025708.1, AB047904.1, AL157360.8, AK025383.1, AL161628.9, AK026591.1, AK000718.1, AL163282.2, AK024992.1, AL136622.1, AL137557.1, AL389978.1, AF285836.1, BC002519.1, AC006112.2, AF225424.1, AB060856.1, BC007450.1, AB055352.1, AK000212.1, BC007571.1, AC010530.7, AB055303.1, AB047869.1, AL137711.1, AF090886.1, AB060887.1, AF274348.1, AF274347.1, U80742.1, AL133619.1, BC006412.1, AL353807.18, AL136784.1, AL137476.1, D55641.1, AK026542.1, AL080060.1, AK026057.1, AK027193.1, AL136781.1, AF002672.1, AL356747.18, AL133560.1, AK026408.1, AF094850.1, AL359941.1, AF003737.1, BC004945.1, AC004383.1, AL136850.1, AB047966.1, AC010972.3, AL359600.1, AB060837.1, BC006180.1, AF132730.1, AL137574.1, AL353745.7, AL162062.1, AF205861.1, AL121601.13, AL136892.1, AL050138.1, AL445236.22, S76508.1, BC004533.1, AF169154.1, AC024247.4, AC004883.2, BC009033.1, AL035407.15, AL138976.5, AE006462.1, AF151109.1, AL138770.3, AB055374.1, AL136844.1, AB056420.1, AF113222.1, AL512689.1, BC006411.1, AL137256.1, BC007198.1, AL122118.1, AJ012755.1, AL035587.5, BC007031.1, AF271350.1, AK027111.1, AF078844.1, AL132985.4, AK026533.1, AC006222.1, AL117463.1, AF245044.1, AC020659.5, AK024601.1, AF069506.1, AK022165.1, AB047878.1. 1.
HDPGT01	44	771583	1 - 2673	15 - 2687	AL52431.1, BG251269, BF310337, AU133126, BF683381, BF038290, AW732293, BF316433, AW170099, AJ056333, BF349288, AA972732, AG75184, AW177595, BE141799, AW664330, BG056730, AW751928, BE141798, AU157403, AI803604, AW516199, AI421509, AI089433, AA622275, AU154510, AA699595, AW733094, BF838983, AI148225, AA921836, AA701632, AI361562, H75815, AV701643, AA931757, AA825979, BE837455, AI247022, AA035572, AI015040, AI032666, AW167576, T89750, BF349289, H06815, AI168573, AI702086, W42567, Z43621, AA505697, R92850, AI204070, AA724075, H06816, W72651, R93066, W76613, W42546, W86249, AA5751931, AI272047, T16739, AI868745, AA860360, AI207229, AI249348, AI073394, AA035062, AA758712, AI204396, T11609, AA649046, AI168656, AA729782, AL110209.1, AL389957.1, AK001705.1, AB017494.1. 1.
HDPH151	45	460679	1 - 714	15 - 728	AC005946.1, AC018755. 3.
HDPJM30	46	879325	1 - 1621	15 - 1635	AI420713, BF951818, R85260, H28149, BF899899, BF594396, AW292642, H44846, BF685411, AI739196, AI867313, BF063759, AI380559, BE504664, AW166357, BE735346, BF064117, AB001535.1, AP001754.1, AP001065.1, AP001064. 1.
HDPNM188	47	972734	1 - 4879	15 - 4893	AV715713, BF446914, BG057685, BF898163, AI083524, AI290271, AA318526, BF932901, R78174, C17785, R77809, BF898707, AW795715, AI638633, BF921994, BF904690, AW016805, AC025040.7, AK025125.1, AC016045. 8.
HDPJO108	48	731863	1 - 1641	15 - 1655	BF968799, BF791555, AI513581, BE879926, AI949941, BE827843, BF968555, AI765763, BE875907

HDPPN86	49	103789 3	1 - 6283	15 - 6297	<p>AW959968, AW382167, BF692458, BE876162, BE106234, AV713629, AV699640, AW382174, AU136532, BF692025, AA449500, AW902068, AW583040, BF212019, AW382170, AU768711, AU918137, AW233520, AI199832, AI074542, AA243341, AA071031, AL513582, AI308913, BE150978, AW609396, AA604828, AA831297, AI304674, BE151243, AW391610, AA704776, BE150919, AU155999, AW389522, AA878385, BF979062, BE150848, BE150932, AA554171, AI086256, AI285140, W48831, AW379916, BF215357, AW389518, AI361484, AI290204, BE150880, AA679730, AA285176, AI367820, BF570762, AA287652, AI028778, AI342266, AI332795, BE501465, AW609661, AA564884, AA497006, BF432681, BF438907, AA496929, AI742352, BE572848, AA824372, AW582335, AA286805, AA809400, AA101705, BE150881, H50009, AI356809, AI863722, AA449072, AW394227, N64570, BE614989, H66597, BE465872, AU157281, BF792958, AW394207, BE702178, AI860155, BE702109, T96603, BF792810, AW802638, H47883, BE702071, AW391634, AA425753, BE149864, BF766698, BF766705, T96711, R59882, AW816178, AI301234, AA524763, AW582392, AW609367, AA427806, AA243537, H89251, AA297709, BE892299, AI703471, AA284029, W49812, AI458780, AW075621, H89250, AI867621, AW380564, BF912063, H66596, AW380556, AW814225, AW380562, AA730264, R59881, AI433332, AA210752, AA863154, BF513435, H47884, AA211712, C00853, AU137710, AI269992, AW337692, AA489590, AA070527, AA101704, AW391666, AA296965, AA296966, AA497092, AI570809, BE673630, T25724, AW582435, BE150974, AW391617, AI954461, BF999751, AW152174, BE876251, AI587112, BF764712, AW816180, AW102931, AK024215.1, AK023478.1, AB014732.1.</p> <p>BE250002, BE394338, AW935469, AW749660, BG250570, BF982358, AI821271, BE541597, AI313180, BE293706, BE872198, W22478, AW976010, AI002815, AW963152, AU117456, AV762145, AV760760, BF792326, AW965008, AV764490, AW837083, AV700498, BG032943, AW600804, AV733710, AV759172, AA680243, AU123691, BE908796, AL037632, BE796439, AI076616, AW406162, AI732120, BF339640, AV700988, AA484962, AV699709, AW965642, AF074667, BE902459, AV760599, BG164166, BE273856, AI313166, AU118745, BE387734, AW961994, AA381195, AI364780, AU159301, AV761286, AA722372, AU158602, BE154495, AL044000, BG250302, AL041706, AL040921, AV700545, AU145083, AI817516, AV729960, AV760258, AW820787, BE071876, BF965477, BE071877, AW974126, AV759362, AI565581, AI284640, AI963600, AI608771, AI048626, AW440545, BF677892, AI204304, BE902975, AW317075, AA836811, AW088224, BF337291, AA634072, AI350211, AV704375, AV760777, AW193265, BF668217, AI133164, AV762395, BF736198, AW953071, AU157011, AW833862, BF241967, AL046409, AW995093, AV711987, AA491814, N94311, AI431303, AI963720, AW276817, BF828714, AI613280, AV762098, AA601355, BG249643, BF697673, AF330238, AV760937, AV728425, AW080939, AA599480, AV740801, BE156019, AI924251, AA469451, F36273, AV658688, BF055844, AI289067, AL119691, AV763354, AI061334, AV763971, BG058664, BF680074, AV725423, AL045053, AW970915, AW975425, AI471481, AI305766, AL138265, BE350475, AI679294, AA205915, AI754955, AL137737.1, BC001041.1, AK000310.1, AC010366.5, AC005280.3, AL137852.15, AC022148.5, AC004263.1, AP001666.1, AP001630.1, AE006463.1, AL354932.26, AC005484.2,</p>
---------	----	-------------	----------	-----------	---

					AL590762.1, AF088219.1, AC007782.20, AC004134.1, AC005288.1, AC011811.42, AC005911.6, AL161656.20, AC072052.6, AC009470.4, U47924.1, AC004859.2, AL035587.5, AL162505.20, AC073138.3, AC025166.7, AL359552.16, AC007954.7, AC034242.5, AL139317.5, AC011455.6, AL022724.2, AL109965.34, AC068533.7, AL161779.32, AP000359.1, AC010271.6, AL109825.23, AL122013.5, AL163282.2, AC020893.5, AC005324.1, AC005257.1, AC003009.1, AC010148.13, AC005011.2, AL109935.39, AL049759.10, AP000901.5, AL354928.9, AC009144.5, AL163853.4, AL109805.14, AC009086.5, AC009996.7, AE000658.1, AC016898.6, AL590076.3, AC008543.7, AC005670.1, AL591770.1, AC007204.1, AC006251.3, AC009122.8, AL034550.31, AL136418.4, AL139054.1, AC006345.4, AC004821.3, AC011497.6, AC003006.1, AC004678.1, AL117351.12, AC000118.1, AL512430.14, AC008622.5, Z93023.1, AC008379.6, AC006435.7, AC006211.1, AF196779.1, AL357515.26, AL049776.3, AL133448.4, AC004675.1, AL137818.3, AL354720.14, AC079753.7, AP001619.1, AC044797.5, AC011236.8, AC020906.6, AC010422.7, AL050328.24, AL109921.21, AC005771.1, AC005234.1, AL136223.11, AL121928.13, AC000075.2, AL163279.2, AL050349.27, AC020558.4, AC005488.2, AC004997.2, AL450339.5, AC004876.2, AC005844.7, AL023575.1, AL121658.2, AC007683.5, AP000553.1, AC008745.6, AC009131.6, AC004596.1, AC004826.3, AL160163.24, AL031597.7, AB023049.1, AC016769.10, AC006064.9, AC005664.2, AB053170.1, AF001549.1, AL590964.8, AP001726.1, AC025593.5, AC018808.4, AC007052.4, AC007011.1, U95742.1, AL035422.12, AP001689.1, AL133477.16, AC004686.1, AL136304.10, AL050335.32, AL158830.17, AF196971.1, AL132642.4, AC004638.1, AL135927.14, AC007227.3, AL136300.22, AC005585.1, AL158159.14, AL118520.26, AL355094.3, AL445201.14, AC003007.1, AC002314.1, AC018828.3, AL139327.18, AC005632.2, AC007957.36, AC011472.7, AL445248.7, AP000302.1, AL078477.5, AL589947.3, AL022328.21, AC024561.4, AC003070.1, AC007298.17, U82671.3, AC008895.7, AC018751.30, AC012476.8, AF215937.1, AC003085.1, AC087071.2, AC005696.1, AP001216.3, AC009958.2, AC005839.1, AD000092.1, AC005682.2, AP000513.1, AL136126.34, AC011816.17, Z98200.8, AC005668.1, AL096791.12, AL162426.20, AL163249.2, AC023114.5, AC002470.17, AC005755.1, Z99129.1, AL035683.9, AC006128.1, AL354808.24, AC008039.1, AC004019.20, AC008079.23, AC005330.2, AL031255.1, U78027.1, AC010740.7, AE006467.1, AC003111.1, AL359513.12, AC004975.2, AC005377.2, AL121929.17, AC023669.8, AC007318.4, AC005520.2, AL136980.5, AC026464.6, AL121989.12, AC005081.3, AP000474.2, AL158210.12, AC011452.6, AC006487.8, AL034420.16, AL133367.4, AP001745.1, AP000555.1, AC016939.8, AC008687.4, AC007666.12, AC006468.9, AC006480.3, AL096841.6, AC005399.19, AC006132.1, AL034380.26, AC006312.8, AC017079.5, AL157372.18, AC021752.5, AF217796.1, AL035450.1, AP001688.1, AF279660.2, AC006130.1, AL133500.3, U91326.1, AL161756.6, AL021939.1, AL035458.35, AC005052.2, AC020915.6, AL445189.7, AC024166.3.
HDPB18	50	104326 3	1 - 3394	15 - 3408	AA631915, AA595661, AL348780, AA489390, AA640305, BG231195, AW239465, AL523205, AA180056, AW975434, AL819419, AV759517, AA199578, BE677227, BF740656, AW839858, AL754064, BF880881, AL270280, AL567676, AA568303, AV706458, BE062357, AL753131, AW247955, AL610814,

					AA493546, AI086603, AV717475, BF875339, AL355512.22, AF207550.1, AF038458.1, AL109797.18, AL118520.26, AL590762.1, AC003101.1, AC004000.1, Z93023.1, AL121712.27, AL034549.19, AC072052.6, AL117692.5, AC020931.5, AP002852.3, AB023048.1, Z93928.1, AC005081.3, AF196779.1, AL133448.4, AP000116.1, AL121886.22, AP001726.1, AC011461.4, AC005015.2, AC006013.3, AC011475.6, AP003352.2, AL121992.24, AC011491.5, AC020663.1, AC008569.6, AC022087.8, AC011495.6, AC010271.6, AC007546.5, AC004812.1, AL139100.9, AC008745.6, AC0079316.15, AC003043.1, AC003962.1, AL035072.16, AC010605.4, AC004522.1, AC007151.2, AL158830.17, AP001694.1, AC009220.10, AC009144.5, AL121574.19, Z98941.1, AL162426.20, AL356299.16, AL122035.6, AL009181.1, AL049569.13, AC074121.16, AL138976.5, AL034372.33, L78833.1, AL117336.22, AP001710.1, AC005913.2, AC006948.4, AC011446.6, AC016894.7, AP001725.1, AC002300.1, AF111167.2, AC005522.2, AC005488.2, AL137229.4, AC008891.7, AC008481.7, AC002470.17, AC011442.5, AC025165.27, AC005004.3, AC005067.2, AL391827.18, AC005377.2, AC005412.6, AP005011.1, Z93244.1, AL158040.13, AL445483.13, AC004967.3, AC006014.2, AL117258.4, AC008440.8, AC011811.42, AL139809.16, AC011497.6, Z97054.1, AL133367.4, AL022316.2, AC018809.4, AL132780.5, AP000692.1, AP000551.1, AC004150.8, AC010553.6, Z99716.4, AC005839.1, AP000892.4, AC009412.6, AP000744.4, AC005180.2, AL135978.4, AP000065.1, AC005098.2, AC004963.2, AC021016.4, AC024561.4, AL139396.17, AC018636.4, AC010543.8, Z93015.9, AL139415.10, AL138756.23, AC024952.4, AC010319.7, AC008806.4, AC010422.7, AL365444.11, AC008812.7, U80017.1, AL121891.22, AC000360.35, AL109743.4, AL096791.12, AL035086.12, AL132712.4, AC010463.6, AP000048.1, AL122001.32, AC004771.1, AC004019.20, AL135927.14, AC007227.3, AC027126.4, AC022384.4, AL024498.12, AC011465.4, AC004890.2, AL132768.15, AL049538.9, AC018751.30, AC007957.36, AC004821.3, AC010458.5, AL109825.23, AC040160.4, AC004125.1, AL109923.29, AC004526.1, AL161937.13, AC006330.5, AL033519.42, AC010598.6, AC008264.10, AC009137.6, AJ003147.1, AL008582.11, AL121601.13, AP001610.1, AL022721.1, AF217796.1, AL049795.20, AB000565.1, AC006449.19, AC019205.4, AL034420.16, AC007277.2, AL020997.1, AC009060.7, AC004887.2, AC008372.6, AL449305.4, AC007536.9, AC006057.5, AC005726.1, AL035460.15, AC011740.7, AC009756.9, AL161747.5, AC005581.1, AC004166.12, AL161670.4, AC083867.4, AL354932.26, AC003982.1, AC005527.3, AC011248.8, AC007216.2, AC020983.7, AC004878.2, AC005399.19, AC004638.1, AL359541.11, AC020913.6.
HDPSH3	51	130917 4	1 - 1649	15 - 1663	AU159990, AI307612, AW079047, AI334650, AW874319, AW139828, AI364431, BE242397, BF726322, BF724691, AI568870, AW268253, AI868831, AI433976, BF795712, BG058208, BF883916, AL119049, AL135661, AL513911, AW303152, AL567632, AL121270, BE047863, BF343172, AI673256, AI679724, BE048071, AL036146, BE785905, AI500553, AI349645, BG168696, AV682521, BG250190, BE964812, AI567351, AI349772, BF971016, BE964700, AW827203, AW235035, BG036846, AI863014, BF812933, AW162071, AI608667, AI436456, AL047042, AI064830, AI349933, AL046849, AI687376, AL515041, AI815383, AL513597, BE905408, AL513553, AL513907, AL514919, AL514803, AW071349, AI500077, AI702406, AL047763, AW999049, BG179993, AL036396, BG107847, AI690751, AL045500, AI433157,

<p> BG252929, BE877769, BE048179, AL119791, BE965556, AV755290, BF054789, AI687728, BF673434, AV682809, BF344652, AV704928, AI538716, AL513741, AV681872, AV682289, AV682266, BF981774, AV727776, BE966388, AV682249, AW089572, AI873731, BE048081, AL036759, BG033403, BG151247, AL514627, AV710608, BG178809, AV655645, AV682672, BF793644, AI440426, AL120736, AW117882, AL121365, AI969567, AI281779, BG259801, AV733819, AW827211, AL515173, AI349256, AL036802, BE018711, AV762488, BG108324, BF968493, BG260037, AV755581, AI687362, AL119748, AI312152, BG257535, AV756067, AI889203, AI349937, BG029399, BG180996, AI686926, AL513693, BE887488, BF817392, AL513803, AW103371, BF036115, AV758668, AV732941, AV711509, BF342709, BF726297, AW195957, AV681647, BF968041, BG108147, BF726001, BE967113, AI521012, AW238730, AI349004, AV757797, AL513837, AV682466, AI366549, AV726951, BE777769, AV723953, BG112879, AV681759, AW074993, AA640779, AI343112, AL036980, AA613907, BG109270, AI340582, BE781369, BG179633, BE048135, BE048163, BF037097, BG121222, AV758822, BG027204, AV758592, AV682479, BE968552, AV757455, BE880190, AI690835, BE963035, AI920968, AI818683, AI499393, BE047859, AV682267, AL120854, AV682082, AV758179, AV757012, AI934036, AL513753, AI282655, AI439087, AV758217, AV756477, AV682441, BE048026, AV681951, AV763915, AI678302, AI609592, BE048319, AV764059, AV706777, AV710479, AW301409, BF726421, AL529946, AI699857, AV682772, AI469532, AL207510, BE969709, AW467961, AV682792, AV717179, AV758806, AI969601, AV709517, AI349614, AL514791, AI866608, AV755311, BF340031, AV682330, AI580190, AV681857, AV711924, BE881155, AW166645, AI349598, AI906328, BG109125, BG114104, AV681668, BE613622, AV708119, AW274192, AV682333, BE964486, BG031815, AW080838, AV755613, AV660662, BE909549, AI597918, AF311287, AK024001, BC008877, BC008417, AL136586, AF078844, AL050393, AL389978, AF090934, AF125949, AL157431, BC008387, AL050146, AL442082, BC007021, AL390167, AL442072, AL133640, AL080060, AB056420, AL133016, BC008365, AB055303, AF090901, AI242859, S78214, AF090943, AL117460, AL136787, AL512733, AF090900, AF090903, AK026608, AF104032, AB048953, AF218014, AB049758, AL137527, AL110196, AL117457, AL133606, AL049452, AL049938, AK000212, AL110221, BC008488, BC003687, AL359596, AL359601, AK026865, AF111847, BC003683, AB060916, AB048964, AB063046, AB047615, AB056809, AL136892, AL136789, AL050149, AF090896, AF219137, AB056768, AB063008, AB063070, AK026741, AL050116, AL050108, AL136749, AB047801, AL122050, AK025339, AL162083, U42766, AB050510, AB060887, AB019565, AK026045, AF106862, AL080124, AL133075, AL162006, AK025084, AL049466, AK027868, AB055361, AB060908, AL136799, AL049314, AL080137, AL137283, AK025958, AL122093, BC001967, AL096744, BC006807, Y16645, AL133557, AL050277, AK026855, AL049430, AL133093, AF091084, AL389982, AK026744, AL136844, AL136768, AK025772, AL122121, AL133565, AL133080, AK026533, BC002733, AL137557, AB060863, AL137459, AK000618, AL512746, AL122123, AF097996, AF207829, U91329, </p>				
--	--	--	--	--

HDPSP01	52	135228 0	1 - 2329	15 - 2343	<p>AF271350.1, AL512719.1, AL512754.1, AK027096.1, AB055368.1, AB060912.1, AK026784.1, X82434.1, AF146568.1, AB062938.1, AL512718.1, AL117394.1, AL050138.1, AF125948.1, AB060825.1, AK026452.1, AK000614.1, AL359941.1, AL359618.1, AK000137.1, BC004556.1, AL136928.1, AK026542.1, AL117583.1, AK000445.1, AK025092.1, BC006195.1, AB060826.1, AB051158.1, AL110225.1, AK000652.1, AB048954.1, AK000083.1, BC001045.1, AK026504.1, AP001873.3, AK026592.1, AK026480.1, AK026583.1, AK025491.1, AB055366.1, AL117585.1, AB048974.1, AL137550.1, AB052191.1, AL353940.1, AL049464.1, AK024538.1, AL133560.1, AF225424.1, AK026532.1, AB060852.1, AK026647.1, AF177336.1, AK026927.1, AB055315.1, AK026353.1, AL359615.1, AL049382.1, S61953.1, AC006371.2, AK027113.1, AK026534.1, AL512689.1, AB047904.1, AK026528.1, AL049300.1, AB063093.1, AC002467.1, AL133258.16, AL513015.6, AL117435.1, AL050024.1, AL136845.1, BC007199.1, BC008070.1, AF348209.1, AL353594.13, AK027204.1, AK026959.1, AK026086.1, AF061943.1, AL512761.1, AK026947.1, AL137463.1, AF091512.1, AC007390.3, BC002839.1, AK025414.1, AC007375.6, AK025391.1, AK025967.1, BC008485.1, AK027164.1, AL122098.1, AC004690.1, BC004951.1, AB052200.1, AK000323.1, AB049892.1, AL353802.14, AK026642.1, AL157482.1, BC008983.1, AK000432.1, AC022215.4, AK000647.1, AF183393.1, AK026651.1, BC008280.1, Z82022.1, BC008899.1, AK024524.1, AC006435.7, AL080127.1, AL133113.1, BC008382.1, AB060883.1, AC026787.4, AL049283.1, AF260566.1, AC009364.8, AB063084.1, AB056421.1, AL136786.1, AK025524.1.</p> <p>BE876951, BF791762, BF112057, BG179551, AV752013, AI091429, BF001176, AV752703, BE391989, AI871101, AI458302, AW292744, BF196320, BE391322, BE390919, BF058297, BF435913, AI560217, AI808718, AI658996, BG056475, AI199318, AI381895, AI814608, AW190726, AA047000, AI479404, AI660983, BE388064, AA419038, AA035467, AW517227, AI361637, AI863893, AI198435, AI078128, AI093316, AJ403129, AA442664, AA725194, AI831358, BE206128, AI274339, AW297826, AW104389, AI948638, AI261248, AI869935, AA915909, AI283200, AI871060, AI269385, AI769275, AI200508, AI566171, AI275083, AI857306, AA910327, AA046943, AI291474, AI291805, AI983969, AW070742, AA423792, AW339900, AI308118, AI869944, AA012994, AI677732, AI913920, AA661657, AA427407, AI197804, AI141350, AA725186, AA954707, BF111675, AI864014, AI051823, AA864187, W24931, N41835, AA031475, N92812, BF734297, BF733728, AA035466, BF000025, AI026152, AA514348, R70380, AA961077, AA031617, AI673156, AA250784, AA378564, AW051192, AW452102, AA411122, AA886656, AW293787, AA012993, H91665, AA927216, AW149476, H91759, T86488, BC006411.1, AC022007.3, AC018809.4, X87479.1, Z22384.1, Z22374.1.</p> <p>BG756849, BG261011, BG178729, BG110345, AI923320, BE466885, BF667257, AW271504, AW243442, BE466659, BG171469, AV661528, AW271637, AW516811, N36059, AI804888, BE882420, AI650826, BF815232, AW964507, AI921747, BE936373, BF984751, BG259707, AI392784, AW076096, AI807747, AW103424, AA604757, AA633209, AW778887, AW418987, AW242326, BE622192, BF666519, BF978796, AW014203, AI925261, BF853590, AW131363, AW514756, N33223, AI819108, AI126250, AV649748, AI953896, AV714556, AI524472, BF697124, BE218100, AW629098, N21567.</p>
HDPSP54	53	744440	1 - 3077	15 - 3091	

					AI694687, AI700209, AA731730, AA577191, BE219931, N33824, BE567212, AW778908, AW087660, AI990562, BF792681, R52426, AI559108, AA743389, N35579, N25189, N30972, BF667662, AI339587, N24947, AI376459, AA742979, N27426, R23308, AI25720, AA954281, AI801129, AW087669, AI701246, AI245517, T26975, BF572334, BE177998, BE564497, AI636147, AI640713, N41938, H97662, AI243263, BE967025, AI572028, BE543895, H29641, BE762905, BF246305, Z46022, H29640, BG223352, AI270534, AI983198, H99399, BF965116, BF692452, Z42169, AI521060, BF102948, R82562, AV646807, N34709, AV646406, R23233, AA373475, BE005657, AA319637, T34245, BG104469, W20047, AW962829, BF572695, AI369988, AI741908, BE830524, H29549, D78710, Z41637, H29548, AA833897, AI367191, AA659275, AW899997, F01708, BF697465, AI246035, AI219239, BF154447, AI221561, AI273738, AI281168, BE005723, BE170424, AI685342, BE882847, AB007962, I.
HDPW68	54	812737	1 - 1734	15 - 1748	AW295848, AI132995, T48851, AI247571, AW469884, AV734061, T48852, BE378325, AW571432, AA344713, AW131386, AU138048, AW190967, BF896891, AA400508, AA400618, AA835515, AF170485.1, AJ007395.1, AI130710.1, AF193441.1, AI130711.1, AF227924.1, AB026265.1, AF247180.1, AF178981.1, AF223403.1, AF195092.1, AC020914.7, AF277806.1, AC011473.4, AF135027.1, AF310234.1, AF287892.1, AC008750.7, AJ130712.1, AJ130713.1, D86359.1, D86358.1, U71382, I.
HDPXY01	55	879048	1 - 752	15 - 766	AW860154, AW860153, AW821875, BE869510, BF094022, BF337555, BF527692, AW845544, AW176604, BF734241, BF928740, BF360615, BE169703, AJ230819, BF734231, AI133649.1, AI271791.1, AI271790, I.
HDTBD53	56	972757	1 - 2789	15 - 2803	AI521719, AL039239, AL522288, AL521718, AW850549, BE745185, BG036401, BF971064, BF982318, AV752274, BE410288, BF970662, BE179100, AA115485, BF037889, AI903708, W74580, AV752030, BF207332, AW069193, AW850706, BE260313, AA114996, AI147007, AA287865, BE294206, AA779902, AW953654, BF203424, AA287665, BF102950, AW089856, BE081349, AI424273, AI337872, W75992, AA039973, AW615357, AA287868, AA040007, AW207183, AW630077, AA844006, AI092051, AA035003, AW374784, W79563, AI095505, AI370765, C05140, AI961895, W92237, BF056098, AI431633, AA011411, AI381447, AA922567, AA688312, AI860011, AI200662, AA676566, H08173, AW590492, BG222429, AI741707, C02948, AA609401, AA427979, AV739012, H29396, AA453991, BE894938, H01836, BG165095, BF333733, W70295, BE242586, N41910, AA054984, R24822, AA156412, BG055899, H48740, H08272, AI241860, BE763810, T63735, R34728, Z42796, BE936536, W88710, AA367891, R36564, Z45070, AA412324, R78131, R56319, AA709055, AA429366, AI915050, AW673132, AL522287, R14984, AA347579, AW023366, AA853400, AA853401, W52589, AA476640, T39346, W88711, AI282590, T29951, AA411419, AA360166, T80320, AA331893, AI754899, AA602993, AA506382, R01609, AA328290, BF808365, N56432, AI832140, AW890834, T31756, R45735, BE929124, AA887981, W31306, BE710919, BE169167, AA039914, BF748450, AW381600, BF352203, AA648132, AI564214, R36407, AW374826, AA383447, T53688, AW198043, AA368172, T53689, N92423, BF237454, AA304402, D79323, AI905754, AA319927, AW197916, AW362124, AW579061, AW579502, AW751634, AA054622, BF086800, D25822, BF925479, BG054837, BF904194, BE966011, BE047833,

				<p> AI432570, BE966787, BE965067, AI244343, AI537244, AV682272, BF904176, AI702343, BE965599, BE963838, BF814761, BE176075, AW366372, AI513693, AI521799, BE964661, AI684164, AI370623, AW020419, AI042365, BE045180, BE965121, AI915201, BF968017, AW813006, AI887775, BF921291, BF990167, AI537677, AI500113, BF812963, BE242668, AI624245, BE967255, BE875243, AI623941, AI927233, N92140, AI621341, BG029399, AI819663, AI698391, AI251221, AA024941, AI570857, AW162194, BG164558, AI250627, BF811808, BE047798, BG104506, AI884459, BF814357, AI439903, AV758455, BE964617, AW078839, AI267185, AI046385, BF813196, AI610357, BG178788, AI831938, AI919547, AI683897, AW117926, BF337896, AI453248, AI620810, AI591228, AI038529, AW129616, AA665587, AW089275, AW079360, AI047854, AW051088, BE408063, AI499483, BF680133, BC003125.1, AK027757.1, AK027466.1, BC008054.1, AI136916.1, AC090645.1, AK027827.1, AF086408.1, AC090886.1, AC090004.1, AK024538.1, BC006195.1, AF349466.1, AI117457.1, AK026647.1, AC006994.4, AI136767.1, AK025391.1, BC008284.1, AI136786.1, AK025414.1, AI1389935.1, AI049938.1, AF245044.1, AI137478.1, AK000655.1, BC003104.1, AI133559.1, BC003614.1, AI390154.1, AI359623.1, X83544.1, AK026762.1, AI137533.1, AI117435.1, AI117648.1, AF114784.1, AK000432.1, L30117.1, AB056420.1, AI133080.1, AB044547.1, AK026494.1, AK026534.1, AI157480.1, AI356859.12, AB060211.1, BC008282.1, AI133016.1, BC003602.1, AI359615.1, AI050155.1, AI049283.1, AI359596.1, BC008075.1, AK025119.1, AC007597.3, AK026550.1, AK026021.1, AI122050.1, S77771.1, AI136862.1, AK027142.1, BC004880.1, BC007248.1, AI080234.1, BC007680.1, AK027868.1, BC001418.2, AK024992.1, AK026164.1, AK025209.1, AK025431.1, BC001873.1, AK027144.1, BC005843.1, AI096744.1, BC008840.1, AI136842.1, BC006287.1, AI080110.1, BC007206.1, BC002539.1, AB050410.1, BC004202.1, AK027146.1, AF126488.1, AF061795.1, AF151685.1, AI353940.1, BC001778.1, BC003052.1, BC001967.1, AK027103.1, AF110640.1, AK026571.1, AK000618.1, AI137529.1, AK026927.1, AB047631.1, AI050277.1, AI137267.1, U88966.1, M86826.1, AI049324.1, AB050533.1, AB048994.1, BC007460.1, AI157464.1, AK025798.1, BC006458.1, AJ012755.1, AI137550.1, AC004200.1, AB060908.1, AI389957.1, AK025349.1, AK000257.1, AB060914.1, S76508.1, AI137294.1, BC006181.1, AF106862.1, BC004292.1, BC009192.1, AB049848.1, X61970.1, AB028451.1, BC003587.1, BC002370.1, AI133081.1, AI110296.1, AI133099.1, BC008788.1, BC001963.1, AI136644.1, X99971.1, AI512719.1, M79462.1, AF11112.1, BC008708.1, AI133104.1, M64349.1, BC005805.1, Y08864.1, BC006509.1, BC008718.1, AK026626.1, AK026613.1, AI512746.1, AI117585.1, AF132730.1, AI583915.1, BC004215.1, BC003122.1, AI136787.1, AI137480.1, AI162004.1, AB063091.1, U77594.1, AK026894.1, AB048953.1, BC000217.1, BC008591.1, AK026590.1, AK026541.1, AF232009.1, AB060857.1, AF094480.1, BC002413.1, BC006207.1, AK024978.1, BC001199.1, U57352.1, AI136864.1, BC000066.1, AI049426.1, AK000653.1, AY034001.1, BC008040.1, AB055290.1, AB049892.1, BC005073.1, BC008364.1, AK000137.1, BC004899.1, AI133640.1, BC000677.1, BC007456.1, AB048954.1, AF218033.1, AB048974.1, AF113222.1, AK025350.1, BC003682.1, BC004310.1, BC002342.1, BC002736.1, AI137656.1, AI133619.1, M80340.1, AK024546.1, BC004368.1, BC007499.1, BC004960.1, </p>
--	--	--	--	---

					AK026865.1, BC008185.1, BC009221.1, AJ001838.1, AK026504.1, AF069506.1, AL080154.1, BC007657.1, BC006410.1, AK026630.1, BC008784.1, AB060917.1, AB055368.1, AF262032.1, AL133062.1, AF260566.1, BC001336.1, BC004119.1, AL050143.1, AF081571.1, AL136586.1, AL080148.1, AF000145.1, AB062750.1, AF227198.1, AL133665.1, BC009294.1, BC002733.1, BC000253.1, AK025383.1, AK026592.1, AK000418.1, BC002809.1, BC001790.1, AK026155.1, AL353957.1, AB047930.1, AK027204.1, BC001964.1, AB048975.1, AB060852.1.
HD7BV77	57	785879	1 - 2167	15 - 2181	BF689672, BE387282, BE898209, BE386984, AA393894, BE893192, W22615, AA134750, BG006306, AT769121, BG006608, AA808986, AA367857, AA344170, BG013403, BF368795, AA367892, AW605363, BG006302, BF932070, AW948496, AK027375.1, BC004282.1, AK027831.1, AK027849.1, AI872206, BF966561, AW513884, AI912340, BE856991, AT758821, AW337178, BE327923, AW004890, AI572080, BG109128, AW058001, BF342854, AW886887, BF967940, AW474823, BF337371, BF591084, AA775261, BG164538, AA831357, BE087219, AW074361, AI361820, BF696525, AI982775, BF793075, AI690445, AA581345, AU156793, AI917776, D20022, AA825538, BF382552, AJ360561, AW439592, AT798286, AI140796, AT277190, AA100279, AA485257, AA835492, AI522238, AW517943, BG035022, AI015234, AA706811, AI469550, BF197859, AI689240, AW265061, AT744762, AW450726, AI884872, BE714642, BE138867, T34498, BF213985, AW769512, BE073192, AA122332, BE138831, BF090537, AI811224, BG167993, BE932894, BF980823, AI355770, AA092467, AI471817, BE904497, BE719958, AI702026, BE171537, BG166879, AI597962, BG180321, BE171499, BF914841, BF967213, BE932875, AI681670, AA089786, BE327680, BE219939, BF032916, AU136610, AI624976, AK001917.1, AF035606.1, U58773.1.
HD7DQ23	58	130698 4	1 - 2193	15 - 2207	
HE2DE47	59	619852	1 - 3519	15 - 3533	AL517387, AL526769, AL526907, AL523193, AL523194, AL515001, AL515002, BG030741, BF980577, BE903049, BE729941, BG163644, BE966268, BE067770, BE613706, BE780216, AL138389, BF196312, BG177870, AI041824, BE902470, BE384275, AI123426, BE384622, BE298710, BE067771, BE298416, BE885382, AI432657, BF966758, BF979153, AT708574, AI814491, BF036235, BF437789, AT720253, AI201638, AW182430, BF692903, BE867186, AA911185, BE748929, AW189237, AI432659, BE223052, AI687145, BF382011, BE564813, BG036747, AI024779, BE268867, AW029376, BF028837, AI024507, AW880654, N47923, AA706430, AA563625, AW662575, BG111471, BE748409, AA232692, AA864782, AI016478, BF676114, AW966708, AW958178, AW513800, AA010686, AI376397, AI081671, AA976495, AW167417, N98819, AA648548, AT721089, BF574678, AA311869, BF331286, AW731669, BE166594, W73934, BF110011, BF247329, BF382964, AA718927, N66559, BE832805, AA679466, AI224843, AA972211, W72314, AA664363, AI218733, AI571934, AA703942, AI690284, AW629428, N93202, AI350756, W28597, AA251850, AA688326, AA659803, AA143217, AA626686, BE614598, H96804, AW008436, BE693652, AA071465, AI041197, AA196284, AA010687, AA199756, Z30115, AW275267, N79354, N29375, AW151589, BF900837, AA935300, AA836130, AW673688, AW978790, AA777494, AW090055, AI090119, AW468015, R52190, T57886, AI992225, AW303565, AI364081, C18513, H64124, AA761409, AW024044, AA988587, AW511332, AW009882, AA332452, AA126237, BF816114, AA587628, AW674842, AI654600, H28730, AW519184, AA722914, AA568222, AA766768, AA452758,

					<p>AI660131, T80441, AA743252, AI301049, AI582560, AA354888, AI192985, AW881224, AA659807, AA111908, AA384439, AA550787, AW591943, AV737948, AI991751, AW881220, AA768293, BF836804, AL517386, AA452580, R52095, AW194374, AI734966, AI094526, AI368645, AI933697, R39012, AA641785, AW881273, AA731215, W93220, AW881163, BE832836, AI362123, AA306249, AI028585, F09225, AA251954, W38817, R77126, W99334, T90405, AA085837, AA302983, HI6312, AV739270, T85557, AA126402, AA380638, AA729885, N69096, AI955495, R54396, HI6372, W93221, AA196142, AA974211, AA609032, AA922821, AA234384, AV744357, AA295432, AV739678, T97675, AA470710, AW938060, N62386, F04755, AI696775, AA298259, AA298571, BF939879, AI760728, R77125, BF367979, AA376505, AA865813, AA298871, AA492599, AW673976, BG253501, AI933856, AA306725, AI363737, AA999867, R25590, AA360269, R26986, AW593198, AI024271, R53081, AA143216, BF797376, BE855704, BG230502, AA380483, BC002597.1, AF180473.1, AF113226.1, AK000662.1, AB049862.1, AF147398.1, AL137674.1, D17008.1, D17177.1, T57968, R54395, H64171, AA010441.</p>
HE2NV57	60	740750	1 - 853	15 - 867	<p>C05927, R72949, AA327984, AC084730.2, AC016673.5, AC004929.2, AC016716.6, AC008066.4, AC003969.1, AC024082.6, AC002302.1, AC013246.13, AC011490.7, AL158064.16, AC084729.2, AC078851.4, Z98743.1, AC020610.6, AF195953.1, AC016910.5, AL359394.9, AC005227.2, AC003692.1, AC016776.6, AC002300.1, AL451107.6, AL157838.24, AL031737.2, AL050335.32, AC007690.11, AC004541.1, AL022401.1, AC018796.4, AL358913.4, AL008583.1, AC005868.1, AL133383.10, AC006070.1, AC006211.1, AL359680.4, AL158035.14, AC087072.2, AC009424.2, AL391686.10, AP001684.1, AC006013.3, AL356461.15, AC016598.5, AP002980.2, AL158817.11, AL035685.21, AC034251.5, AC006134.1, AC020906.6, AL391241.21, AC015983.7, AP003470.2, AP001889.4, AL357519.19, AC087430.2, AC005081.3, AC005886.2, AC018509.5, AF277315.3, AC010913.9, AB020875.1, AJ011930.1, AL163300.2, AP000952.2, AL133387.8, AP000953.2, AL162503.12, AC025765.5, AP002342.3, AL445232.5, AC023114.5, AC004891.1, AL355792.8, AL163280.2, AL109662.3, AC010206.8, AL049843.18, AC017076.14, AC009362.8, AC005015.2, AL096791.12, AC002487.1, AC010726.4, AL353752.6, AP002846.2, AC005344.1, AC022363.24, AC009498.3, AP001699.1, AL138976.5, AC008064.2, AL357507.9, AP001670.1, AL137061.12.</p>
HE2PH36	61	570903	1 - 1544	15 - 1558	AA329666, AA664883, AI133353.6.
HE8DS15	62	847060	1 - 2185	15 - 2199	<p>AV725650, BE161426, AW130367, BF343057, AA127680, BF575221, AI096437, BF941499, W58383, AI161240, N95226, AW966449, AI356752, AI093508, AI057144, AA044288, AW130361, AI423547, AI221152, AI094774, H47283, AI352542, AI891136, AI002491, T53270, AA044116, R48378, R24320, AV658066, AI829703, AI819388, BE140169, Z44849, R16574, T39273, AA095159, Z25099, AW273857, R16633, AA384077, AI245095, AW026140, T93764, BE927909, N73937, AW118768, AA121543, AA995178, AI453845, AA703455, AI452494, AW044037, H40993, R48277, AW629019, T64039, AA904647, AW073189, W21055, AW263913, AI096938, Z28777, W03697, AW797518, AI039546, AI434419, AW050649, BG003285, AI240412, AA886341, H23905, AI695284, AI767991, H47284, AI309041, BE927916, AA724059, AI352281, AI584012, AA618131, AA357401, AI796309, BE936061.</p>

HE9HY07	63	420063	1 - 818	15 - 832	AB018301.I, AL096772. 5.
HEOMQ63	64	603533	1 - 1322	15 - 1336	BG026315, AW102828, A1659843, BE551400, A1640582, BE208434, BF510823, AW955647, BE669917, AA789132, AA923523, W44769, A1346827, A1092608, BE267189, AW450220, A1350733, AW090676, AA830093, N98535, N69933, BF694104, A1000893, A1379944, AW968025, AA252680, A1202595, N32022, AL522177, A1026801, BF514413, AA075433, BG014214, AW452208, BE694426, BG171349, A1335272, A1634906, BE796712, AA846518, AA954350, AL522176, A1863776, BE265224, BF359220, BF359223, AW386074, BG112515, AV662306, AA973539, AA329532, F22685, AW136310, N28654, BG014217, AA610002, BG014216, C02160, W37089, N51549, AA361150, BC005984.1, AL109657.8, AL161659.17, AK025977. 1.
HEPAB80	65	130779 0	1 - 785	15 - 799	AW274007, A1677890, AW510786, AW468943, AA335322, A1807924, AW172560, AC006116.1, AC011506. 3.
HFABH95	66	566712	1 - 1333	15 - 1347	BF035708, A1431513, AA832175, A1251429, AV729905, AV754716, A1538491, AU122466, A1446474, AC005006.2, AC008747.5, AC008805.7, AL160155.19, AC005081.3, AC013751.6, AC006241.1, AC004216.1, AL137853.12, AC069285.8, AL590762.1, AC004491.1, AL035659.22, AL158040.13, AL022323.7, AL160411.25, AC005231.2, AC005952.1, AC008649.6, AC002059.3, AL355480.22, AC007850.29, AC024163.2, AP000501.1, Z98304.1, AL122035.6, AC008569.6, AL360227.17, AP000694.1, AC005480.3, AC009470.4, AC008392.6, AC011464.5, AC005911.6, AC008440.8, AC013734.4, AL034417.14, AL139082.18, AC005242.1, AP000511.1, AC008403.6, AC040160.4, AL353653.19, AP001725.1, AL049776.3, AC004148.1, AC007686.5, Z98946.15, AC007374.6, AL137787.11, AC000159.6, AL109984.14, AC002350.1, AC009087.4, AP000351.3, AF240786.1, AC005037.2, AC011490.7, AL022238.1, AC006101.3, AL356481.16, AC005971.5, AC010458.5, AC025588.1, AC005072.2, AL359091.10, AC008521.5, AC016831.1, AL117330.6, AC006312.8, AC007055.3, AC024561.4, Z83826.12, AF196969.1, AC002300.1, AL121891.22, AC005594.1, AC010319.7, AL022322.1, AL513008.14, AC008623.4, Z83838.2, AC005972.1, AC006084.1, AL117694.5, AC008119.6, AP001711.1, AC005102.1, AC004840.3, AL133174.15, AP002453.3, Z83844.5.
HFAEF57	67	534142	1 - 628	15 - 642	AV655597, AW967329, AW963498, AV706016, AW966767, AL121984. 14.
HFCEB37	68	411345	1 - 788	15 - 802	AW971191, BE710287, AA493766, D56115, H06701, Z41729, AA285136, AA256963, F04210, AL118652, AW893768, AW893769, AW160783, AF258348.1, AC007552.4, AL050152. 1.
HFFAD59	69	520369	1 - 456	15 - 470	AV699250, AV662248, AV699269, AV719565.
HFGAD82	70	513669	1 - 1867	15 - 1881	AL119979, BF346635, AV726399, BF035097, AV727342, AL119977, BF920864, AW888751, N31682, AW148844, AA772781, AA326677, N23200, AW961610, BF976989, BE765872, BE765750, BE765749, BE765443, BF570590, BE765618, BF438771, BE766953, BE766490, F06586, BG057153, R60278, F07047, AA628815, AV722183, R16237, BF364146, AA204942, AV734361, N71200, A1000462, R54067, Z40722, BF337123, R54066, AW903171, H24278, AV726415, H16893, AW897545, H16783, H22887, R16238, F03521, R42035, F05678, T80483, AA321847, AV731162, AV731097, AV730504, AV730299,

HFUR10	71	532060	1 - 527	15 - 541	<p>AV731130, BE763530, R20855, AA386266, AW890775, R45969, R42611, N94832, R39831, F02857, F03323, T03048, R11992, F07675, AU118413, AW890773, AA640468, N95708, F05679, BE830656, BF948144, M85660, AL119687, AV722325, AW904904, BF344999, AI003266, N76471, N47227, AW903272, BF977690, T53097, BF918689, F01937, N58994, AI000789, AW898733, BE702498, BE699153, AL118827, BE708346, F07242, AW897547, F01938, N51309, AC003037.1, AC022486.4, AC007379.2, AC007064.27, AC006548.20, AC016752.2, AC008175.2, AC007965.3, AC007322.4, T66696, T66697.</p> <p>BF195618, AA191239, AW969824, AA009856, AW019964, AA808036, BE677291, AW973259, AW023662, AV742957, AU146063, AI369580, BG109444, AU153717, AV709074, BG032605, AI357823, AW888719, AL110373, AI832009, AV708388, AV725797, BE150580, AA223512, AV734980, AA402529, AA595661, AW410201, AA683069, AA191418, AI144036, AW474168, BF681348, AI590458, AI590499, F08248, AW302048, AV760508, BE794962, AA665181, H07953, AW971071, AA654781, AV763410, AA749035, BF965290, AI609972, BF676985, AV708385, AW504485, AV762633, AW166808, AA282951, AI860535, AI792575, AA634889, AW302950, AL048060, AI254913, AW875172, AI281689, AA668587, AA084619, BF675051, AI354423, AA832077, AI733129, BF674550, AI041924, BE139451, H73550, AA828853, N39953, AW863393, AV757526, AI859946, AW976008, AW023111, AA747234, AI565084, AV710482, AW814024, AV710045, AW963482, AI355246, AA814925, BE077105, AA653182, AA664521, AW440305, AI054397, AA651639, BF725761, AV758073, HI5652, BE280771, AW438542, T74524, AW191063, BF940118, AW968205, AV762973, AA552578, BF965924, BF879045, AI251034, AI251203, AI251284, AW805539, BG236628, BE78259, AI250552, AA632556, BF809041, BG029224, BF686994, AW020736, AF236698, BE139139, AW271904, BF978025, BF681424, AU118374, AV758790, BG110480, AI803809, AV758097, AA574442, AV733434, BE155302, AA644664, AI792521, BE246472, BE901278, AA626825, AI686913, AV706237, BE155299, AW302293, AV702609, AA533123, BE968477, AV738383, BF814446, AI891080, AA516190, AA533040, AI284543, BE273825, AW779609, BF525663, AI380617, BF914419, AI079734, BG166965, AW069227, AL043351, AI267161, AV762870, AV658819, AV709273, AL042735, AA503018, AI973173, AL046746, BE062357, AI963705, T69857, AV730245, BF810071, AW301736, Z97987.1, AC020913.6, AL031281.6, AC007637.9, AL096757.1, Z93017.6, AC087225.1, Z83840.7, AC008073.4, AF245699.1, AC010349.7, AC087315.21, AL163011.3, AC004106.1, AC004132.1, AC008925.3, AC004990.1, AL133351.33, AC010618.7, AC006275.1, AL035405.10, AC034203.7, AC006930.1, AF156495.1, AC008754.8, AP001732.1, AL139824.22, AC003037.1, AP001646.4, AC005162.1, AL050341.18, AL034420.16, AC024075.4, AL117382.28, AC008521.5, AP001039.1, AL512378.7, AC005778.1, AC091394.2, AL132768.15, AL139385.12, AL049569.13, AL109914.16, Z95152.1, AL163541.13, AC006367.3, AL442203.12, AC005684.1, AL117377.18, AL109828.22, AL031681.16, AC007488.15, AC007425.16, AC018462.4, AC007934.7, AL078602.13, AC010002.6, AC005038.5, AC009743.1, AC006538.1, AC053467.1, Z95115.1, AP001922.4, AC010203.13, AC010150.3, AC006545.3, AC006546.9, AC004970.2, AP001696.1, AL390736.6, AC003035.1, AL355543.13, AC007318.4,</p>
--------	----	--------	---------	----------	---

					AC007381.3, AC006253.4, AC022173.7, AC040160.4, AC003684.1, AC009331.5, AL109823.23, AL451107.6, AL359873.11, AC004605.1, AL035682.16, AP002453.3, AC063947.30, AC006270.1, AC016526.6, AC003664.1, AL078634.24, AL157897.7, AL109031.1, AL137802.7, AJ251973.1, AC002326.1, AL356421.10, AC006388.3, AC078846.2, AL138721.16, AC004103.1, AC090949.1, AC090944.1, AL139150.12, AL162423.18, AP001718.1, AL109915.10, AL390208.17, AC004616.1, AP002851.2, AC017100.4, AC022425.6, AC006080.1, AC005027.2, AC017006.4, AC024163.2, AL049540.11, AC005522.2, AP000353.2, AC008008.2, AL445205.14, AC078843.2, AC073864.28, AL161657.22, AL031280.6, AL035696.14, Z81364.1, AL157938.22, AC090426.1, AL389883.9, AL024474.1, AL138703.10, AC008266.3, AC073057.6, AL132800.4, AC007784.7, AC002996.1, AL354816.5, AC011449.6, AP000193.1, AL022313.1, AC008379.6, AP003352, AC005004.3, AC005514.1, AL118501.22, AL009028.1, Z86064.1, AP002812.3, AL035249.6, AC009131.6, AC002549.1, AC032011.14, AL109984.14, AF001549.1, Z84467.1, AL034419.22, AL512883.5, AC006204.1, AL353574.8, AC006960.1, AC009079.4, AC009503.3, D87009.1, AL354932.26, AC005014.1, AC005859.1, AL139110.17, AC003662.2, AL035089.21, AC005751.1, AL390738.4, AL133246.2, AP000694.1, AC020659.5, AL133355.12, AC004854.2, AL359236.4, AC006237.1, AK023233.1, Z85999.1, AL022323.7, AC003046.3, AL031730.1, AL160471.5, AL160071.16, AC010548.8, Z82206.1, AF029308.1, AC005498.1, AL133342.14, AP000348.1, AC011465.4, AC004812.1, AC007221.2, AL022316.2, AL035072.16, Z97630.11, AF312032.1, AC008551.5, AC007685.2, AC005034.1, AL391602.6, AC005220.1, AP000117.1, AL023883.6, AP001150.4, AL109825.23, AL137782.9, AL096800.20, AF252279.1, AC005695.1, AC016993.4, AC007620.30, AL022237.1, AC006481.3, AC018812.5, AL035420.15, AC004611.1, Z84487.2, AC018719.4, AC010163.7, AL133344.28, AC011290.3, AC007292.1, AC011895.4, AP001929.4, U63721.1, AC002352.1, AC011444.5, AC005327.1, AL451075.15, AC004595.1, AL138720.19, AL451185.14, AC002470.17, AL008732.1, AC006460.3, AL137119.26, AC005786.1, AC006211.1, AF134726.1, AC010205.5, U52112.1, AC007597.3, AC016026.13, AC005215. 1.
HFTBM50	72	545012	1 - 748	15 - 762	AL529436, BG254023, AA069656, AW512689, AA928735, BE901109, AL529437, BE074967, BE074973, AA423996, AI027673, AI130940, AA827360, AA424006, AA421599, AW602733, AI580837, AL526924, AA114876, AA576953, AI858981, BF222157, AL526960, BF542049, AA136831, AI200715, AI358322, AA988755, AW602739, AA187921, AL527090, HI0340, AI499041, HI0044, AA252300, AA188494, AA856927, R44331, AA588683, AW364266, BE092940, BE007334, R51006, AI253378, AA481649, AI686745, AI628242, BE092920, BF733881, AA729977, BF026424, AW804569, AA421594, AW994967, AA481416, BE733257, BF876214, AA679567, AW028221, AU134538, BE251492, BE729280, AI906091, BC002480.1, AK023414.1, AP002347. 3.
HFTDZ36	73	545726	1 - 1089	15 - 1103	AV721599, BF732420, BF510533, BF508158, BF508241, AI638188, AW181935, AI758929, AW592730, BE967495, AA447514, AI078837, AV723652, AI218418, BF692673, AA884756, AI335250, AW118870, BE044339, AA426363, AV730822, AI868197, BF947599, AA927228, BF952754, BF952302, BF952504, AW905268, AW905266, BF952591, AI673798, BF952850, BF952505, AW905263, BF952750, BF952589,

					BF952851, BF952752, AA897687, BF572515, AW9053328, BE6995339, AI830527, BF952755, BE210822, AA431528, AA029326, H41714, AA437157, N53641, BE699547, AW905379, BE699537, BE796741, AW898982, AI218421, AF2890762, AC067967. 2.
HFXBL33	74	778070	1 - 1619	15 - 1633	BG141322, AV652809, AV662223, AV699247, AV699167, AV662247, AW963961, AV699098, AV662272, AV725496, AV727824, AV699218, AV719825, AV719156, AV699200, AW952432, AV720062, AV720893, AV653163, AV650903.
HFXJX44	75	701988	1 - 1370	15 - 1384	AC004491.1, AC024579.4, AL136084.11, AC016564.5, AC005015.2, AC007011. 1.
HPXKT05	76	658690	1 - 1701	15 - 1715	AU124431, AW960435, BF525944, AA781090, AW514159, AW390483, AW965129, AW170237, AW582015, AI700395, AI079309, AW339256, AI140441, BE700940, BE842726, BE842730, BE700936, BE700869, AW581975, AI022857, AI903097, AI401014, AI379419, BE700861, BE700862, BE772035, AI434349, BE772040, BE772042, AW673336, BE700873, BE700876, BE842723, BF439588, BE700941, BE700945, BE700943, BE772099, BE700938, AA703354, N50989, BE772066, BE700937, AA719006, BE908235, BE772053, BE772081, H69547, BE700904, BE772059, AA574083, BE830929, BE772082, BE818955, BE818958, BE772101, AI251845, AI243536, BE772019, BF870875, BE818964, AW517983, BE700851, AI983670, BE772020, BF359589, H70004, AW820559, BE840628, BE700898, T63151, BG012510, R11344, AA305705, BE818962, BE840434, BE840457, AW752129, AA565124, BG010792, BF849721, BE772047, AI905362, AA731490, BE818915, BE772087, BE772018, BE772074, BF110884, R14845, BE772086, BE772015, AI983820, AA344670, AA889063, R07438, BE840445, C15468, T63006, BE170135, R09631, R06659, BE772017, BE836162, AI540442, BE830923, AI023272, AW868068, BE830919, AW868069, BE818892, AA324635, AW960971, BE818951, AW674579, BE832289, BF091071, AK001249.2, AB007936.1, AK027078.1, AL117402. 1.
HGBHI35	77	570262	1 - 1423	15 - 1437	AW027617, AW167655, AV705616, BF112047, AV647323, AI761852, AV647362, BF475491, BF941241, AU134617, AW273477, AA632135, BF589834, AW188958, BE328783, BF673582, AW025350, AW469123, AI248475, AW071025, AW513405, AV707439, AA443956, AW959532, AA974499, AA586906, AA411210, AA748561, AV647324, AA574049, BF001545, AA993212, AU155540, AA405832, AA418055, T65000, AA633212, AA417996, AA716696, AW338423, AI951713, AW269824, AA705781, AW294610, N29931, AW193961, W74344, AI623473, W95062, N58311, AA434443, AI452555, AI476814, AI707848, AI591113, AW071570, AA504192, AI284330, AA993753, AA422102, AA814543, AA833607, R59175, H69589, N27730, N27744, AI050821, H91466, AV661353, N26927, AA384582, T53881, AA723025, AW952885, AA708478, AA412129, N80150, AA805411, AA325056, H86073, AW080735, AA719996, H48787, AW439101, AA327279, AW439110, R72184, AA317298, AA290758, AI302593, AI041429, AA932990, AV692965, H68481, AA290757, AI301278, AA928847, AV709914, R70407, AA342345, AW971285, T71152, AA528307, R00838, AI915200, AI470398, AA888272, T50944, T54028, AI784177, R69430, AI298655, AI801093, AA363967, AA935078, AA935062, T99499, AW450038, F37718, AI740409, AA419235, AW074842, AA700546, BF057503, AV656088, AI798643, AA946561, AV684912, C05231, AA342344, AA405831, AI682312, R72230, AV696820, AI557037, T72850, BG122003, AI478342, AA504193, AI474859, W91943,

HGLAF75	78	566838	1 - 762	15 - 776	BG164862, AW841423, AI243763, AI364219, AA879063, AA419337, AV698254, BF847168, BG004190, AK001810. 1. AW968403, AW268460, AV699333, BE388094, BE387809, AA805707, BF112044, AA769677, AI379717, AI419895, AI858342, AI708860, AA044030, AA465222, AI677780, AI189447, AI221144, AI073526, AI286149, AI540808, AI298414, AA847808, N29749, AW170779, AA344901, AA044352, R52970, BE836466, BE716265, BG057223, BE836496, H40701, R55340, AA873679, AI363753, BF792412, R40137, AW965142, AA725486, AA344902, T27542, BE716174, N57171. AC004912.1.
HHENV10	79	562772	1 - 1141	15 - 1155	
HHGCG53	80	340818	1 - 393	15 - 407	
HHGCM76	81	662329	1 - 697	15 - 711	AW248957, BF828801, BF828604, AI675194, AW028119, BF826770, BF827069, AW452880, AI491913, AI799880, AW450970, AI377883, AI201976, AA595164, AI088096, AW612440, BE792795, AW006952, BF063362, AI697133, AA643065, AA580017, AI819005, AI866931, AI560641, AA635584, BF446220, AI829011, AW952316, AL524066, AW243832, AI200458, AI634449, AI670745, AI269568, AA326815, AI873666, AI523219, AL520944, AI478177, L31980, AW245254, AW194690, AW771866, AI767850, AW079488, T87766, D45523, BE242113, AA055697, AI306732, AW275312, BE280419, AI908657, R48473, AA013188, AI908646, BG250796, BE796614, T72628, BC002980.1, AC003665. 1. AI939620, AI480056, AW300615, AW300620, AI589129, BE386438, BF920454, BE386547, AW961851, AI911546, AV726263, AI361251, AI498527, AV725146, AW901919, BE967591, H41544, AA326679, AA348503, AI422476, AA912288, AI423129, BC004271. 1. BE903356, AI026821, AA503776, BF114724, AI435527, AL036946, AW298357, BF240642, AA969442, AI767392, AI142574, AI094514, AW073866, AW241144, AA206595, AA040034, AA354909, AW972134, AA814156, AA9333895, AA040828, C01416, AA457220, AI138875.8, AY027525. 1. AA311188, BF940968, AI478697, AA309875, AA481249, AL533052, AA481563, AW242463, AA760629, AV651897, AV660258, AV661286, AV709580, AV653353, AV726590, AV703632, AV725255, AW960067, AV705453, AV726243, AV652001, AV704144, AV726194, AW956292, AW949777, AV708520, AV727618, AW959858, AV656283, AW967329, AV727932, AV728953, AV725582, AV708786, AV708872, AV661369, AW952013, AV705340, AV704234, AW965148, AV726156, AV705836, AV708991, AV725618, AW952301, AW958796, AV725596, AV709248, AW959986, AV726337, AV709407, AV728355, AV725031, AV707948, AV725441, AV729424, AV652528, AV725577, AV707556, AV704626, AV702071, AV706223, AV705665, AV704785, AV728404, AV709733, AV729366, AV708320, AV705343, AV727822, AV707264, AV704611, AV729473, AV702738, AV725321, AV690930, AV728743, AV727978, AV727337, AV727562, AV729129, AV704712, AV701953, AV727052, AW955629, AV729532, AV704520, AV706964, AV704973, AV702817, AV705504, AV709356, AV704279, AV705829, AV702164, AV701880, AV701626, AV707401, AV704756, AW955019, AV701183, AV728289, AV708203, AV703591, AV697880, AV647941, AV703417, AV753624, AW963446, AV654035, AV709935, AV726628, AV707654, AV706290, AV655552, AV654282, AW949521, AV709880, AV709939, AV705189,
HHPEN62	82	695134	1 - 2138	15 - 2152	
HJABB94	83	456466	1 - 1541	15 - 1555	
HJACG30	84	895505	1 - 1518	15 - 1532	

					<p>AV704686, AV706882, AV727314, AV702954, AV727238, AV691615, AW967328, AV682997, AV727126, AV727347, AV728652, AV702787, AV706162, AV709596, AV686417, AV701728, AV701873, AV656240, AV692972, AV694871, AV705239, AV727459, AV655901, AV728715, AV701499, AV703972, AV703090, AV707794, AV702790, AV728546, AV705267, AV703762, AV703273, AV706734, AV702854, AV709025, AV706025, AV705684, AV656224, AV705299, AV709273, AV706165, AV727343, AV709932, AV702625, AV727468, AV707088, AV709549, AV64545, AV702498, AV701874, AV706671, AV705433, AV705866, AV728255, AV709256, AV706076, AV726559, AV651075, AV702537, AV706279, AV703436, AV727103, AV704097, AV726653, AV706532, AV706133, AV701496, AV658784, AV727807, AV728459, AV729077, AV707804, AV704592, AV704974, AV701858, AV703456, AV703515, AV702280, AV727032, AV705416, AV704116, AV702728, AV706910, AV727047, AV706889, AV705014, AV705047, AV703035, AV701538, AV727029, AV702869, AV725380, AV728455, AV706741, AV707830, AV707510, AV704971, AV706683, AV725956, AV707769, AV705234, AV706891, AV706527, AV728471, AV706758, AV690921, AV707798, AV725991, AV702725, AV724987, AV706448, AV725845, AV685113, AV726789, AV725387, AV726830, AV726787, AV702417, AV701844, AV702851, AV727189, AV706655, AV725386, AV655067, AW962136, AV706992, AV707420, AV706183, AV703366, AB000616.1, U94592.1, AJ244005.1, AJ244004.1, AJ244003.1, AJ244007.1, D78345.1, D50010.1, D13316.1, AB025273.1, AF144029.1, AJ276256.1, AJ276254.1, Z30183.1, AF144028.1, X82834.1, Y14219.1, U45328.1, AB005666.1, S81957.1.</p> <p>AL518865, AL526445, AL518864, BF690211, BE795952, BG261247, BG122941, BE871131, BF342499, BF797882, BG034854, BE874386, BF684303, AW958340, BF055513, BE265238, BF055496, AL042954, AL044311, AW393087, BF590235, BE251517, BF688851, AW500006, BF750912, BF436031, BE207255, AI523943, AI809559, AW615714, AI088845, AI199469, AI088821, BE792741, AA707004, AI393362, AI859578, AA864359, AI359119, AI963339, AA259086, AW027379, AA186786, AA703021, AA305929, AA393356, BE729570, AI961726, AW274049, AI216448, AW503180, AW505339, AI015694, AA291342, AI049539, AW873566, AI092749, BE410341, AI817912, AI870620, H44330, AI366215, AA258242, R46300, R16949, AI744596, R54656, BE386449, BE410337, AI807057, AW081887, AL041401, H15972, BE710574, BE410414, BE35502, BE222788, AA398688, AW273864, AA404987, D59795, AA077661, BE047327, T10451, AI871075, D59810, AI368575, BF526818, AA962247, AA335735, AW000813, BF435172, AA188015, R75708, AA329264, BE713106, AI218840, AA329538, AA291343, AA826970, T35806, R10855, D59833, D59821, BE547124, D80231, AI080034, AA299767, BF203222, AI908002, AA973311, AW087244, BF920764, AI648592, D80329, BE537114, BF511965, D59677, W93021, AI919083, AA749327, R16895, R55419, AA354448, AA136776, R54853, R46205, D59561, AI969256, W51754, AW273865, R10856, AI452772, BF765954, R10335, BF858687, AA076725, BF955782, BF206768, BF310354, BF032473, C01203, BC004286.1, AL050110.1, AB037861.1, AL137358.1.</p> <p>AL530365, AL524811, BG035149, AL524846, AV653215, AL525028, BF031163, BE464161, BF064198, BG057645, BE677690, AV714679, AI954819, AA708718, AA773040, AW206827, BE677490,</p>
HJBCY35	85	719729	1 - 1545	15 - 1559	
HJPAD75	86	651337	1 - 1217	15 - 1231	

						AW590005, AL522800, AI075390, BG179367, AI933314, AA022693, AA563665, AL582700, BF591973, AI933036, AA011394, BE463890, AI304827, AW467513, AL675049, N47573, BE537595, AI075392, AI346305, AL514603, W26975, H02832, AI290715, AA535130, AW137781, AW298065, BF927479, AA917670, AA011431, AL530366, AA974770, AA535120, AI497684, AI277012, AI274193, AL514604, AW297638, AW779938, AA356778, AW067366, AL524812, AL524847, BF763877, AV652546, H03723, F09604, F09318, H83110, AA216050, AW573003, BF926201, AI572540, AL525029, BF092250, D80466, AI940747, AK027129.1, BC008984.1, AF043945.2, AL163284. 2.
HKABZ65	87	862030	1 - 1175	15 - 1189		AA715814, AA503019, AV762033, BE155099, AV734997, BF917346, AW338860, AC011666.28, AF242518.1, AF109907.1, AC004867.5, AC020917.4, AC004166.12, AL356915.19, AC005071.2, AC004878.2, AC005052.2, AC005081.3, AC002549.1, AL590763.1, AC020663.1, AC006064.9, AC008745.6, AC004858.2, AC022405.5, AC007666.12, AC008750.7, AL451144.5, AP001716.1, AC009131.6, AC004656.1, AL109825.23, AL355312.24, AL035086.12, AC010605.4, AC004067.1, AC004477.1, AC008736.6, AL109915.10, AC006023.2, AL033529.25, AC007637.9, AL139317.5, AL031311.1, AL049776.3, AC004971.3, AC009220.10, AL080243.21, AC005015.2, AC004686.1, AL022318.2, AC002310.1, AC009123.6, Z93015.9, AC021999.4, AL355353.23, AL050318.13, AL161756.6, AC011464.5, AL132712.4, AL359513.12, AC007546.5, AP001695.1, AL035683.9, AC018711.4, D87675.1, AL133444.4, AL139100.9, AF030453.1, AC006077.1, AC008895.7, AP001713.1, Z84487.2, AL357153.4, AL163636.6, AL359382.23, AC004770.1, AP001972.4, AC004675.1, AL355392.7, AC020906.6, AL138784.30, AC020754.4, AL162426.20, AC002288.1, AC009068.10, AC008101.15, AC008623.4, AC008891.7, Z98884.11, AL136137.15, AC011247.10, AL133163.2, AP001727.1, AC005098.2, AC004659.1, AC005670.1, AL139022.4, AC009812.17, AF088219.1, AL035404.20, AL139801.17, AF228703.1, AC002492.1, AC006084.1, AL353594.13, AC005077.5, AL160271.19, AP001724.1, AC008537.5, AC024561.4, AL139353.3, AC004491.1, AC008626.5, AL391987.15, AC010530.7, AP003352.2, AC009267.15, AL122013.5, AP000008.1, AC087071.2, AC009314.4, AC020913.6, AL078463.11, AL096700.14, AC002369.1, AC010102.3, AP003357.2, AL031123.14, Z95331.2, AL513008.14, AL118501.22, AP001435.2, AC005200.1, AJ400877.1, AC011469.6, AC016772.8, AC005089.2, AC005088.2, AF312912.1, AL022316.2, AL080317.11, AP001693.1, AP000553.1, AL390294.19, AC006345.4, AC091394.2, AL359813.23, AC007283.3, AL353807.18, AL109921.21, AC074121.16, Z98742.5, AC007383.4, AF243527.1, AC027130.5, AC010504.7, AL035462.21, AC010650.8, AC005180.2, AF334404.1, AL139187.19, AC005037.2, AL021391. 2.
HKACB56	88	554616	1 - 482	15 - 496		AI935239, BE122852, U51140, BG121875, BF970449, BE879967, BE545287, AL311480, BF968910, AI207454, BG031442, BF815930, BF792050, BF339322, AI924051, R99209, AA669025, AA505147, AA806160, AK026797.1, BC000650.1, AB060839.1, AL133557.1, BC009192.1, AL136622.1, AB048888.1, AL512754.1, BC002485.1, BC004908.1, AF004162.1, AL358532.11, BC004181.1, BC006251.1, AK026603.1, AK000647.1, AK024974.1, S69510.1, BC008823. 1.
HKACD58	89	135220	1 - 3139	15 - 3153		AL528271, BE513051, BE874633, BE727126, BG119953, AA877796, BE897630, BE616928, BE873485,

					BE409112, BF568632, BE886189, BE890308, BE259677, BE389188, BE386943, BG033053, AW957771, AW880570, BE389298, BE782739, BE042596, AI829975, AW027434, AI335269, AI525602, BF382771, AA495894, AW402301, N46240, BE735624, BF887879, BE258030, AI819188, BE349022, AW008354, BF509970, AI683541, H38504, AI365603, AA178917, AA180758, BE812358, BG250135, BE874703, AW390227, BG029976, BE812223, AA354527, AA178918, AI204915, AW194439, AW390207, BF875432, AA425001, AW368379, R88102, BE932912, BF511057, BE932910, BE301126, BF912732, AI360437, AA370005, BE764970, R69656, R53778, BE830394, AA134615, BE697358, R54897, F37313, AI536107, AI280553, F34525, BE171591, AI524965, AW880505, F27458, AI193372, R55008, AW339374, AW999021, BF885645, AA227281, BF799341, BE410974, R55146, AI651533, AA355898, AA149032, H21738, BE937883, R78049, T74386, T27237, R69572, H22354, AW946340, AW169264, AI630501, AI699781, BG001443, AA343322, BF932030, AI971329, BF813656, AI096656, AI367032, AA380842, AI138431, H22385, BF929569, T50676, BE93507, D29121, AA668973, BF934053, BE206656, AI620083, AI493047, AI872461, H29733, BF793181, BC006159.1, X80590.1, AL050037.1, AC006457.3, AC006455.2, BC000224.1, AF075046.1, AL117382.28, AC009242.5, AC002565.1, AC009314.4, AC011005.7, AC007934.7, AP000547.1, AL442096.1, AC083866.2, AC008551.5, AC020550.4, AC002365.1, AF001548.1, AC008073.4, AC005225.2, AL590762.1, AC010792.4, AL365332.9, AC004491.1, AC004686.1, AC004551.1, AP000744.4, Z84480.1, AC005484.2, AC006236.1, AC005622.1, AL135749.3, AL158198.14, AL034548.25, Z82214.23, AC012597.24, AL161781.12, AC009137.6, AC018636.4, AC011362.2, AC005899.1, AC004965.2, AC006241.1, AC005098.2, AC002563.1, AC091394.2, AP000338.2, Z83844.5, AL096701.14, AC009228.4, AF000216.1, AC019171.4, AL445645.10, AC007371.16, AL365364.19, Z93015.9, AL391241.21, AC009120.8, AC091492.1, AL358434.16, AL049776.3, U82828.1, AC005520.2, AF196779.1, AL358777.12, AC010271.6, AC002352.1, AL133245.2, AP000337.1, AL139100.9, AC004253.1, AC004149.1, AL158167.15, AL034420.16, AC004386.1, AP001760.1, AF111168.2, AC018639.8, AL353812.13, AC004953.1, AC006487.8, AC010616.5, AC009812.17, AL445493.8, AC008670.4, AC004770.1, AL117692.5, AC004166.12, AC005821.1, AC004144.1, AL159168.15, AC005071.2, AC008764.7, AC008892.5, AC009247.12, AC004867.5, AC010605.4, AC005103.3, AF047825.1, AL121834.20, AC078846.2, AL117334.29, AL163973.1, AC074121.16, AC004824.3, AL138849.12, AC011497.6, AL391868.15, AC007021.3, AC008655.6, AP000500.1, AC006038.2, AL160175.5, AC010422.7, AL109920.15, AC011465.4, AL109976.23, Z85987.13, AC090939.1, AP000102.1, AL136418.4, AL139054.1, AD000092.1, AL031311.1, AL034549.19, AC010543.8, AC007336.5, AL033543.6, AL590763.1, AL136137.15, AL050349.27, AC005067.2, AC005412.6, AL139343.9, AL121895.26, AP000115.1, AC006101.3, AC010512.7, AC002418.1, AC018695.6, Z98941.1, AC020915.6, AC027319.5, AC004150.8, AC006345.4, AC009049.3, AC008403.6, AC005488.2, AC005207.1, AL121900.26, AC020904.6, AC008066.4, AC007374.6, AP001727.1, AL136228.8, AC025166.7, AC083871.2, AC008752.6, AC008569.6, AC005089.2, AC013429.12.
				15 - 2496	AU133136, AV762150, AW967049, AI114751, BF678978, BF698605, BE536006, AA317243, BE748143.

3				BG163940, BE789994, BF724673, BG231175, H06819, R19670, AA081581, BF129960, AA334334, H26678, BF332901, BE159061, BE159060, BE159062, BF818584, BF819690, BG115835, BF986034, BF819681, BE872393, BG236735, AL118991, AA515224, BF822777, AW872676, AW630298, AI291124, AW872575, AI801482, BE677379, AI801591, AI873916, AI017024, AW794809, AI291268, AI061296, BE883501, AW467340, AA482681, AI200051, AI245679, AW467362, AA525790, AV681599, AV760191, AI192631, AA620411, BE677026, AW473163, AW102849, BE042475, AV738303, AV715162, AA348017, R97934, AV761745, AV764609, AV761286, AK001708.1, AK000169.1, BC008120.1, AL035246.13, M13254.1, AC003681.1, AL022238.1, M87917.1, AC005779.1, AC011495.6, AC004918.1, AF045555.1, AC005757.1, AC022148.5, AC000085.5, Z70289.1, AC004926.2, AF085444.1, AC007570.23, AC007066.4, AP000513.1, AL139100.9, AC005089.2, AL133387.8, AC011442.5, AB023052.1, AC000052.16, AC005104.1, AC009225.3, U67828.1, AC005484.2, AF254822.1, AC004477.1, AL022721.1, AC004159.1, Z99128.1, AL135648.1.16, AC007021.3, AC0066530.4, AC010642.5, AL355497.14, AC005940.3, AL049757.14, AP000744.4, AC010506.6, AL034451.26, AL139317.5, AC018828.3, AL080317.11, AC011500.7, AC022383.3, U63721.1, AC011464.5, AC007536.9, AL359457.12, AC004854.2, AC009412.6, AC011497.6, AC005057.2, BC004147.1, AL035681.13, AL356499.16, AL450226.1, AL022329.9, AL133332.12, U95740.1, AC002369.1, AC020750.3, AL122004.17, AC006452.4, AL021391.2, AC006312.8, AL158159.14, U78045.1, AC002984.1, AC083855.2, AC004662.1, M19045.1, J03801.1, AP000842.4, AC018758.2, AP000553.1, AL451125.7, AC004973.1, AC018751.30, AL133245.1, AC008486.6, AL391827.18, AC073316.6, AC006468.9, AL049759.10, AC004000.1, AC018809.4, L78810.1, AL355385.15, AC010358.5, Z98949.1, AC005204.1, AC027644.9, AL133376.6, AC004019.20, AL122023.3, AC005056.2, AJ003147.1, AC007011.1, AC005368.1, AL132838.4, L81693.1, Z68756.1, AP003357.2, AL122003.17, AF207550.1, AF012654.1, AC026882.5, AC006511.5, AP000115.1, AL117333.26, AC083868.2, AC005184.1, AC005264.1, AC024166.3, AC016601.6, U95090.1, AL163279.2, AP000306.1, AL138759.20, AC068533.7, AC016697.8, AC002460.1, AP000349.1, AL137077.31, AC008536.6, AL031281.6, AL022322.1, AL031668.23, AC025165.27, AC066580.3, AP001680.1, AC034193.4, AC016831.1, AC079363.19, AL590762.1, AL121777.39, AC008443.8, AC006277.1, AL136170.12, AC005261.1, AC020931.5, AC004814.2, AC005695.1, AC010150.3, AC026475.6, AC008610.6, AC002288.1, AC004867.5, AF165926.2, AC007163.3, AC025679.4, AC009086.5, Z83844.5, AC007546.5, AC004476.1, AL096840.25, AF373586.1, AE006639.1, AC019097.5, AC010645.5, AC091529.1, AC068660.3, AL034420.16, AC009499.4, AC022384.4, AL157938.22, AC004821.3, AF196779.1, AL159168.15, AC008403.6, AL445201.14, AL162491.10, AL450343.4, AC004224.1, AL031255.1, AC009007.4, AC004966.2.
HKAF766	91	946512	1 - 987	15 - 1001 AA436785, AI804932, AA310516, AW966935, AA873013, AA251417, AI798761, AA250867, BE720668, AW827206, BG122481, AI826225, AI811785, AI539808, BF970449, AL039086, AW983783, AI554821, AI784252, AW105601, AV708119, AW054931, AV727839, BF968205, AL119863, AI280747, AI611738, BE047737, BF970768, AW193134, AW118518, BF904265, BF089711, AI610362, AL042628, BF793370,

AL036980, AI312428, AA833760, AL513763, AI829327, AI433384, AI589267, AI269862, AI564723, BG031539, AI624548, AW302992, BG260037, AI802542, AI569583, AW169653, AI800453, BE048071, BF792961, AI439717, AI567612, AI611348, AI869367, AW081797, BF343172, BG031815, AL038605, AI570781, AW051258, AL513901, AI802240, AI274728, AW071417, AI571909, BG249582, BG257355, AW152469, AI612885, AW022682, AW148320, AI569579, AI252023, AI608936, AW075413, AI500077, AI318280, BE781369, AI636585, AI251434, AI862144, BG255895, AI890806, AI625094, AI955906, AI309401, BG110517, AI431424, AI343112, AI612913, BG110684, BE895003, BG168549, AW268253, AW301300, AI349598, AI554344, AI036664, AW075207, BE886728, AI345735, AI678357, BE964078, BF872670, AI475394, AI633419, AI348897, BF904258, BE138712, AI500659, BE966699, AI247193, BE887488, BG030364, AI648684, AI313320, AI627988, AI251221, AI630928, AI340627, AA640779, AI340603, BF904263, BE910373, AV743962, AI587143, AI312146, AI312339, AA572758, AI889168, AI345258, AI348854, AW193000, BE964614, BF817926, BE965432, AW020693, AI457369, AI040243, AI445115, AI620866, AL513699, AW081242, AI610645, AI801325, AI866798, AI932794, AI689248, AI340582, BG110241, AA225339, AA427700, AI270707, BG179993, AV682672, AW827228, AI955467, AI681985, AI684265, BE895585, AW074993, AI349614, AI590415, AI811353, AI354283, BF868928, BE885241, AI564247, BG058398, AI302910, AI955917, AI349256, AW946806, AI312152, AI174394, AV682867, H89138, AW075084, AI567351, AI800433, AI950664, BE048179, AI036288, AI634224, AI349937, AW089572, AI344884, AI039132, AV651436, AI670009, AI349957, AI307708, AI312325, BF981774, AW269097, AI609409, BG036846, AI591420, AW190042, AI572892, AI045266, BF971016, AV682218, AL121286, AI916419, BF925729, BF339322, AI307520, AI925156, AI445237, BE047952, BG180996, AI306613, BE544111, BE885353, AI434256, AV708097, AV712838, BF924882, BF885000, BG113299, AV757028, AA012905, AI917123, AI134999, AW075351, AV682521, AI874166, AI036736, AL036901, BG168696, AW151138, AW268302, BG033723, AW023590, AI306705, AI436456, AI608667, AV682763, W33163, AI282281, BE785868, AW170635, BG250190, AW073994, AI390882.12, AK027164.1, AF056191.1, BC003687.1, AK000432.1, AL512733.1, AK024538.1, AL157482.1, AF177336.1, AL117460.1, X72889.1, AF090934.1, AL359601.1, AK026526.1, BC008488.1, AK024524.1, AK024588.1, BC001045.1, AL136787.1, AB047904.1, AL049452.1, AK025084.1, AK026947.1, AL512750.1, AF090896.1, AL136845.1, AL050146.1, AK026855.1, AK026597.1, AB048954.1, AB056420.1, AL137560.1, AL136749.1, AK027868.1, AK027096.1, AL359583.1, AL136844.1, AB060852.1, AL157431.1, AB060826.1, AB060916.1, AB060825.1, AB055368.1, BC008893.1, AL117435.1, AK027213.1, AK000614.1, AL162083.1, AL049464.1, AK026534.1, AJ242859.1, AL136892.1, AK000137.1, AK025524.1, AL137463.1, AF090943.1, AB048964.1, AK025906.1, BC008070.1, AB047801.1, AB055303.1, AB060887.1, AL359615.1, AK000618.1, AL137550.1, AF225424.1, AL359596.1, AL117583.1, AK026647.1, AL133080.1, AK026629.1, AL133075.1, AF125948.1, AF111847.1, AF146568.1, AL133113.1, BC007199.1, S61953.1, AK026045.1, AB060908.1, AL133557.1, AL136789.1, AB049758.1, AL122093.1, AL133606.1, BC008983.1, BC008382.1, AK026592.1, BC008417.1, AK026353.1, AB055366.1, AL050149.1, AL133016.1, AL442082.1,				
--	--	--	--	--

HKBI57	92	876571	1 - 1128	15 - 1142	<p>AL110225.1, BC008365.1, AL117394.1, AB051158.1, AL389982.1, AL117457.1, AK026504.1, AK025092.1, AL122098.1, AL050116.1, AK025772.1, AL080124.1, AL136799.1, BC003683.1, AK026542.1, AK000647.1, AB060863.1, AL110221.1, AL137527.1, AB063070.1, AF218014.1, AL049314.1, BC002733.1, AK000083.1, AL137538.1, BC008387.1, AL442072.1, BC006412.1, AL050393.1, AF078844.1, AF091084.1, AL136928.1, X82434.1, AF097996.1, AK025967.1, AK025391.1, AL080159.1, BC008899.1, BC001967.1, AL1512754.1, AK026959.1, Z82022.1, AB063046.1, AL137459.1, AB063084.1, AB052200.1, U80742.1, AB056768.1, AB019565.1, AL122123.1, AF230496.1, AL137557.1, AK000445.1, AL136786.1, U42766.1, AL137648.1, AK025491.1, AL050277.1, AL117585.1, AL512689.1, AF219137.1, AF090903.1, AF125949.1, AK026593.1, AF260566.1, AL050108.1, AL133565.1, AL122121.1, AL049466.1, AB053361.1, BC006807.1, AB056421.1, AF090900.1, AK026452.1, AL583915.1, AL512719.1, AB047615.1, AL133640.1, AK026741.1, AK025484.1, AB055315.1, AL050024.1, BC002839.1, AL110196.1, AL122050.1, AJ012755.1, AL110197.1, S78214.1, AK026784.1, AL162006.1, BC007021.1, AL136768.1, AL512765.1, AL136586.1, AF090901.1, AL512718.1, AL080060.1, AB052191.1, AK026086.1, AB048953.1, AL512761.1, AK025339.1, AB063008.1, AK026651.1, AL359618.1, AF183393.1, AL512746.1, AF207829.1, AK026532.1, AL353940.1, AL133560.1, AK000718.1, AL390167.1, U91329.1, AK026865.1, AF106862.1, AF104032.1, AF061943.1, AK000652.1, AL122110.1, AL359941.1, AK027113.1, AB060912.1, Y16645.1, AL049938.1, AL133093.1, AL389978.1, AL512684.1, AK026583.1, AL049430.1, AB050510.1, AL049382.1, AL137271.1, BC004951.1, BC008280.1, AK026744.1, AK025958.1, AK025414.1, AK027204.1, BC008485.1, AB062938.1, AK026630.1, AL136843.1, AK025632.1, AL080127.1, AL162062.1, AK026927.1, AK000323.1, BC004556.1, AL080137.1, AL050138.1, AL137521.1, BC006195.1, AL122049.1, AB055374.1, AL049300.1.</p> <p>AL518848, BE795484, BE790580, BE793563, AI005330, AL530857, BE865465, BE740884, BG259765, BE559709, AW972157, BE793925, BF732476, AI523173, AI133648, BF132480, AA741065, BE266365, AW246779, AA483640, AI553793, AA889963, AW731821, AW376863, AI457636, AI159951, AI076501, BE865290, AW250974, BF683810, AI245539, AI160351, AI122216, N70566, AI123318, W04730, AI298575, AI094218, BF840014, AI298397, AA627412, AW474453, BF063304, AI304872, W80875, BE645309, AI829879, AA877594, AW514292, AA721451, AI032434, AA564388, AA723454, AW571641, AW591598, AW605095, AA404537, BF326544, H07869, F13805, AI055951, AI122217, AV693323, AA308813, AI474982, T08020, AI678622, AA284386, AW839757, AW189626, AL530858, BE393850, W80766, BE143803, AA706470, AA319710, AA480437, BE936534, BE166705, AW051083, AA121863, AI432644, AI927233, AI687607, AI924051, AI431307, AI623302, AI431316, AI431238, AI539800, BE897632, AI590043, AI289791, BE883591, BG167830, AI285417, AI866786, AI687588, AI537677, AI494201, AI872315, AI500659, AI866465, AI815232, AI801325, AI500523, AI538850, AI887775, AI582932, AI923989, AI284517, AI872423, AI440260, AI500706, AI445237, AI491776, AW151138, AI889189, AI521560, AI500662, AW151974, AI567971, AI804505, AI815239, AW172723, AI284509, AI582912, AI538885, AI440263, AI889168, AI866573, AI633493, AI434256, AI866469,</p>
--------	----	--------	----------	-----------	--

					AI434242, AI805769, AI866691, AI888661, AI500714, AI284513, AI888118, AI285439, AI859991, AI436429, AI355779, AI623736, AI889147, AI581033, AI371228, AW194509, AI491710, AI440252, AI926593, AI440238, AI860003, AI610557, AI242736, AW058275, AI888749, AI539781, AI539707, AI702065, AI885949, AI285419, AW089557, AI529957, AI521571, AI469775, AI866581, AI866503, AW151132, AI539260, AI567953, AI815150, AI446495, AI431321, AI867068, AI932620, AI890907, AW074057, AI042729, AI889191, AI952433, AI225248, BE885490, AI358271, AI798359, AI282249, AI698352, BF812963, AI371229, BG252929, AI539771, BF811804, AI561170, AI042595, AW151979, AI284516, AI432666, AI289101, AW858522, BF814072, BF811802, AI039508, AW151136, AI866458, BG029667, AI371251, AI493559, AI866510, BG249858, BE826157, BG113493, AI866461, AI923046, BG110517, AI687944, BG176609, AI047611, AI955221, BG257535, AI889157, AI039390, BF795712, AI559976, AI690946, AI567947, AI436438, BG253986, AI648567, AI042787, AI134524, AI433157, AI362495, AI371243, BF796402, AI288076, AI515375, AI042853, AI469764, AV736134, AI432653, AI431323, BE886728, AI042655, AV736402, BF815930, AK023992.1, AK027449.1, BC001215.1, AF152097.1, AI355392.7, AI136763.1, AI133049.1, AI133053.1, AI136825.1, AI133607.1, AI133076.1, AI122101.1, AI049423.1, AI133084.1, AI133070.1, AI133655.1, AI136765.1, AI136781.1, AI110223.1, AB048910.1, AK026784.1, AI133074.1, BC008781.1, BC007294.1, AI133015.1, AI133608.1, AI136828.1, AK026927.1, AF002985.1, AI162008.1, AI117445.1, BC008983.1, AI157482.1, AI122049.1, BC004991.1, AF082324.1, AI133051.1, AB049849.1, AI136808.1, AF057300.1, AF057299.1, AB047623.1, AK026480.1, AK025860.1, AI049557.19, BC003108.1, AI512733.1, AK025484.1, AI512765.1, AC004213.1, AC006039.2, AK000225.1, BC000649.1, BC004314.1, AB047941.1, AI049300.1, BC000253.1, BC004530.1, AI080139.1, AK026912.1, AI389947.1, AI354864.16, AB047953.1, AI162062.1, AI137485.1, AI137254.1, AI353092.6, BC000009.1, AK000486.1, AC008755. 6.
HKFBC53	93	135228 6	1 - 2224	15 - 2238	BF027339, BF689868, BE791172, BE273437, BE260092, BG031379, BE727402, BF339469, BF984194, AI760572, AI760520, BE294301, BE676312, AW297966, AI244284, AI422554, AA962223, AI971830, BF975689, BE252368, BE383741, AA644162, AW245081, AI598190, AI090193, AA495832, AI143992, AI361951, AI990481, AI990174, N50101, AI350501, AA994262, AI859137, AW003834, AI380542, AI086091, AI394639, AA976745, AA293019, BF027207, R90773, AA253139, AA495776, F23330, BF690095, N33565, AA417706, R88936, BF869114, AI351614, AI202144, N72164, BE408877, AA115762, AW237082, W00431, AW025153, BE159093, AI284384, AA610858, AI766469, AI685216, AI672360, BF718243, AA745682, AI119175, AI582214, AW274357, AW134904, BG033163, BE546341, AW268196, AI913519, AA082841, R36266, AW072885, AA114066, AA496881, AW474388, BF745906, AA133537, AI693690, AI000915, AA293473, AC005786.1, AC005787.1, AF218008. 1.
HKGDL36	94	877489	1 - 1038	15 - 1052	BF966686, BF969262, BF798423, BE383172, BG108317, BF438085, BF967072, BF724971, BF910167, BF437374, BF525713, BF725537, BE312863, BE327726, BF526596, BF983368, BF966496, BE392518, BE045542, AI261620, AI628667, AI955247, AI796185, AW024651, BF724972, AI365220, AI767645, BE551437, AW051507, AI199503, AI418919, BF724666, AI039610, AW162506, AI955309, BE673721,

					<p> AW138191, AI969138, AW583447, AI373491, AI696987, AW583390, AI952012, AW341037, BF310234, AI758216, BF438130, AW013963, AI955147, BE669440, AI768473, D61105, BF592013, AI355910, AI969092, AI913491, AW027769, AI423438, AI968975, AI479582, AW090177, H41372, AI927970, AW300071, AI400855, AI348277, AW771649, AI991536, AI421291, BF739771, AW103643, AA894790, BF197412, BF724667, BF197448, AW583609, AW000953, AW299323, AI498193, AA199635, D59847, AV748923, AI560270, AI625846, AI493832, AW590037, AW955700, AI702136, AA877175, AW583672, AA757536, D59877, AA706516, AW393735, D60795, D80419, AI302316, AI248555, D80214, D80684, AI927667, AI627691, AA989221, BE464388, D59878, BE218723, BF346124, AI985164, AW000934, BF967708, AW001692, AI701771, D59848, D59725, AA873392, AA364835, BF431598, H92678, AW135417, AI589246, AW072965, AW163721, AI916619, BF752892, BE964512, AL515163, AW022102, AI783861, AL513839, AA600801, BE621073, BE544111, BF815196, BF910849, BE963809, BF814409, BE784387, BF840099, BE963918, BG170109, BE613727, BE880341, BF814360, AW005029, BF921092, AV712606, AV681927, BE967251, BE964621, AI866741, AW059713, BG108334, BE536377, BF929585, AI254754, BF764538, AA824513, AW083804, AI539462, BF129016, AI446605, AL513741, AA830821, BE966699, AI924035, AI445976, BE875966, AI242248, BE885353, BE538466, AI620093, AI537643, AI358042, BE880697, AI683255, AI591412, AI591081, W81248, AI536910, BE964962, AW834325, AI864827, BE048026, AI872159, BE061389, BE964767, AI591057, AW073868, AI863256, AI690449, BE907440, AI884574, F35927, BE878032, BE965121, N95566, AV743128, AV706465, AI445588, BE899377, AI934000, AI280670, AI583578, AI627714, AI500039, AV708075, BE900603, BF752858, AW265004, AI623682, BF341610, AW079032, AI925736, AI252077, AI590787, AW025533, AI267185, BG105895, BE964600, AL513789, F26535, AL048377, BE965527, BE967255, BE964799, AW946864, AL514167, AI627880, BE621140, AV710267, AI678302, AI926878, BE878028, AI633300, BF817402, BF753053, BE875407, BF752999, AI689614, AI624668, BE966390, AI811192, AI866002, F28295, BG260275, BE963286, BF753056, BC002851.1, AF181562.1, AF196971.1, AJ012582.1, BC003104.1, BC007248.1, BC001470.1, AF230402.1, BC002948.1, AF352728.1, U77594.1, AK000212.1, AB063077.1, BC003687.1, BC004314.1, AK026865.1, AK025491.1, BC001294.1, AB060908.1, AK025906.1, AL137557.1, AL136752.1, AK000598.1, AL121656.2, BC002816.1, BC002356.1, AJ010277.1, BC002397.1, BC004529.1, AL157464.1, BC000785.1, BC000725.1, X95876.1, AB060832.1, BC004324.1, AL080162.1, BC002777.1, AF022813.1, AK027113.1, BC004370.1, AB055374.1, AL137556.1, AK024601.1, AK026164.1, AL512705.1, AK026613.1, BC008417.1, AL512746.1, AL136780.1, AL136864.1, BC001969.1, BC004310.1, BC000235.1, AF028823.2, AF112208.1, AL136767.1, BC003602.1, BC005890.1, AL137665.1, BC004417.1, AL137547.1, AF218034.1, AB049629.1, AF239683.1, AL136799.1, BC008196.1, BC006251.1, AK026590.1, AL049347.1, AK026603.1, AL389978.1, AI049460.1, S77771.1, AL512719.1, BC004937.1, BC005678.1, BC001093.1, AF225424.1, AB063071.1, AB060214.1, AB047904.1, BC002557.1, Y16645.1, AB060893.1, BC001349.1, AL137459.1, BC004195.1, AL512718.1, BC001963.1, AF111847.1, AB060914.1, AL535935.1, AL136766.1, AK026600.1, BC002491.1, BC000778.1, AL096720.1, AL359622.1, </p>
--	--	--	--	--	--

HKISB57	95	625956	1 - 1478	15 - 1492	<p>AL049314.1, AB047941.1, AK025119.1, BC004333.1, AF205861.1, AL133568.1, AL136586.1, M92439.1, AL136790.1, AL117648.1, AL137657.1, AF069506.1, BC007207.1, AL133081.1, BC004202.1, BC005931.1, AB060839.1, AL080137.1, AB056768.1, M79462.1, AK025410.1, AL390167.1, AK026533.1, AF090934.1, BC003052.1, BC005151.1, BC00217.1, BC008488.1, AL162062.1, BC004131.1, AL136842.1, BC009294.1, AB019565.1, BC000348.1, AK024594.1, AF188698.1, AL12050.1, BC004530.1, AF132676.1, AB056427.1, BC006440.1, AF061836.1, BC000772.1, BC006458.1, AF217991.1, BC003410.1, AL389935.1, BC006133.1, AF348209.1, AL353625.5, BC002911.1, X66975.1, AK024570.1, AK000450.1, BC008070.1, AK024533.1, AB048888.1, AK000432.1, AL133645.1, BC004899.1, AL359596.1, BC002535.1, AK026741.1, BC004383.1, AF271781.1, AL117585.1, AB044547.1, AB063079.1, AK000310.1, AF036268.1, AB049758.1, AL080074.1, AL442082.1, U42766.1, BC004926.1, BC004960.1, BC005872.1, AL049339.1, AF358829.1, AK026086.1, BC003650.1, AB047897.1, BC002798.1, BC007674.1, AB055366.1, AB060929.1, AK025239.1, BC005854.1, BC002342.1, AL359623.1, AL110225.1, AL122118.1, AF321617.1, AC025226.4, AK026649.1, AF271350.1, AK026045.1, AK000652.1, AK000445.1, AL133062.1, BC002519.1, BC004297.1, BC006106.1, BC000094.1, AL136828.1, AL137648.1, BC006196.1, BC002343.1, BC006494.1, BC000316.1, AB060226.1, AL157483.1, AK027142.1, AK000323.1, AK025517.1, BC008025.1, AL353956.1, BC002476.1, AL050092.1, AL096751.1, U91329.1, AF081197.1, AF081195.1, AK025383.1, BC005002.1, AC006357.5, AL080060.1, BC001762.1, BC000386.1, BC005858.1, AB049849.1, BC002539.1, AL162008.1, AK024538.1, BC005007.1, BC002647.1, AB047887.1, AB047623.1, AB060873.1, BC004265.1, AK027081.1, BC001293.1, BC008485.1, BC001045.1, AK027164.1, AL136644.1, AL122098.1, AK000655.1, AK000421.1, S69510.1, AL137284.1.</p> <p>BG253059, AI888563, AW083174, AI890983, BE677527, AI742994, AA581853, BE208188, AA496043, AI749573, AI433172, AA912116, AU152415, AU151244, AA526295, W72233, AI708515, AA029171, AI289783, AA147482, AW001857, BE744941, BF851250, W76470, AI148076, AI619715, W32695, AI973179, BF856405, AA086231, AI536682, AI244167, AW205328, AI12137, AI015550, AI159953, AA449234, AA449289, AI886087, R48602, AW974749, R48705, N57904, W73612, AA515533, AI095398, AA086322, AA554446, AA317019, BE019888, R07096, AA894669, AA112027, T96414, AA923651, T96497, AI581984, AI093238, AW084446, BE834394, T65129, AA100811, BF767404, AA652428, W32694, AW364698, BF371383, AW390788, AI9033419, AI903380, AI903350, AA300051, AW886927, H55267, AA029067, AA588851, AA588463, BF931116, BE646329, AW514396, T65909, AW578218, AW800794, R07042, AA625855, AA663955, AA687595, AI581808, R76016, W22074, AA043407, AA436950, H39017, BF814527, AI824576, AI702073, AI698391, AW080090, AI633062, AI608936, BE786043, AI358213, AI306705, AW983832, BE963838, BG179993, AW051258, AI677796, AW051088, BF856017, AI932794, AI366900, AI352497, AI889189, AW983829, AI270183, AW163834, AL514731, AI434468, AI812015, AI249877, AI679672, AW118518, BF812960, AI284131, AW029611, AI468872, AI699011, AI927755, BF792961, BE966388, AI886753, AW827289, AI564719, AV743962,</p>
---------	----	--------	----------	-----------	---

					<p> BG108406, AI567846, AV741327, AI573060, AI783504, BG112718, AI620284, AI866770, AW198075, BF032768, AW083778, AI514899, AI611738, AI280732, AI619502, AI680162, AI802542, AW081255, AI280607, AI499285, AI570807, AW004886, AI452560, AW026882, AW151136, AI923370, AI627988, BF812938, AI118781, BF970652, BE789764, AW104724, AI670009, AI863382, AI433157, BE543089, BF812961, AI452993, AI624548, AI659795, AW079572, AI860783, AI633125, BF812426, F27788, AW089179, AI673785, AI915291, AI354998, AW152182, AI537024, AI917252, BE967261, BF725599, AW080746, AI120853, AW129659, AW163554, AI537677, AI499890, AI612852, BF526020, AI174394, AW192461, AI613270, AW105620, AI119863, AI520809, AI923989, AI036673, AI571909, AI803778, AI653979, BG036846, AW192687, AV682249, AL514357, AW839006, AI274507, AI632408, AI288305, AI635067, BG180273, AI612913, AI119828, AV682212, AI590686, AI435268, AI432030, BE048071, AI500588, AI628217, BE047606, AI637748, AW238688, BG029829, AF064238.3, AJ010306.2, Y13492.2, Z49989.1, AF115564.1, AF115570.1, AF115567.1, AF115569.1, AF115568.1, AI122098.1, AI137533.1, AB056420.1, BC006195.1, BC005858.1, AK024524.1, AI133067.1, AK025092.1, BC001045.1, AI137550.1, AI080159.1, AK026462.1, AK024538.1, AI512733.1, AI050277.1, AI389939.1, S61953.1, AB056421.1, BC008893.1, AI137294.1, BC001963.1, AI389982.1, AF026816.2, AI136844.1, AB060852.1, BC008488.1, Y14314.1, AF260566.1, AI136805.1, AI049283.1, AI512684.1, AK025209.1, AK026593.1, X82434.1, AK026542.1, X72889.1, AI137560.1, AI137271.1, BC004951.1, AB060916.1, AK026532.1, AF183393.1, AI137478.1, AI137556.1, AI583915.1, AK025484.1, AF057300.1, AF057299.1, AK000652.1, AF348209.1, AI353625.5, AK026480.1, AF218014.1, AF25424.1, Z82022.1, AK027213.1, AK027164.1, AK027160.1, AF056191.1, BC003122.1, AF111112.1, AB048974.1, AB062938.1, AI050393.1, AK026534.1, AI122049.1, AI136915.1, AB055361.1, AK025632.1, AI122100.1, BC006525.1, AI110225.1, AI133568.1, BC004556.1, AI136892.1, BC008365.1, BC005678.1, AI080124.1, AK026408.1, AI162002.1, AI122110.1, AK026533.1, U39636.1, AI136893.1, AI050149.1, AK000418.1, AJ299431.1, AB047904.1, AI122093.1, AI050138.1, AI133560.1, AI137463.1, AI136749.1, BC006807.1, AI133557.1, AF262032.1, AB049758.1, AK000323.1, AF146568.1, AF162270.1, AI133113.1, AK025465.1, AI133072.1, AF091084.1, AK026583.1, AK026642.1, AI133640.1, AI359583.1, AK026744.1, AK025084.1, L30117.1, AK000083.1, AI133016.1, AK025708.1, AI353940.1, AI442082.1, U80742.1, AK000718.1, AI110280.1, AK026865.1, AI512750.1, AI162083.1, AF090934.1, AB048919.1, AI359620.1, AI050172.1, AI359618.1, BC004958.1, BC003682.1, AB046642.1, AI110221.1, BC006164.1, BC003684.1, AI512765.1, AI122121.1, AI137292.1, AF271350.1, AI137476.1, AK000391.1, BC008417.1, U58996.2, AB063084.1, AB056809.1, AF090900.1, AF242525.1, AI353956.1, AK026551.1, AI080148.1, AI117435.1, BC009033.1, AK024588.1, AI137557.1, AK026528.1, AK000432.1, BC006440.1, AK026947.1, AK027204.1, AB047801.1, AI117457.1, AI050116.1, AI136586.1, AI137480.1, AJ006417.1, AF061573.2, BC009341.1, AJ012755.1, AI512718.1, BC008070.1, AK027096.1, BC008899.1, AB056427.1, AF217987.1, AB048954.1, BC006494.1, AK026762.1, AK027182.1, AI512689.1, BC002733.1, AK027116.1, AI133075.1, AI133093.1, U78525.1, AI136787.1, </p>
--	--	--	--	--	---

HKMLM11	96	514788	1 - 940	15 - 954	<p>BC008387.1, AF106862.1, AL080060.1, AL359941.1, AK000445.1, AB060826.1, BC005890.1, AB048953.1, AB050410.1, AB050510.1, AK026629.1, AK026045.1, AB050534.1, AF177336.1, AK025414.1, AL117460.1, AL136768.1, AF090903.1, AB052200.1, AK026927.1, AL117440.1, AY033593.1, AL133565.1, AL390167.1, L19437.2, AK026592.1, AK024601.1, AB063008.1, AB055374.1, AK025958.1, AJ242859.1, AF113222.1, BC009212.1, AK026452.1, AK025254.1, AB060214.1, AL110222.1, X53587.1, AK026959.1, AL162008.1, AF218031.1, BC005151.1, AB047615.1, BC004370.1, BC006103.1, AY034001.1, AK000486.1, AL133098.1, BC003548.1, AL050108.1, AL122118.1, AB062978.1, AL136789.1, AL049452.1, AK025391.1, BC008284.1, AK000647.1, AL136786.1.</p> <p>BG036576, AW376266, AW024675, AW965560, AA946948, BE834077, AA306783, AV738527, AV739697, BF241514, AV740463, AA758808, AA431001, AA910368, AA336054, AA335971, AW237846, AW827285, A1050666, AV755459, A1583054, AA764946, AA459982, A1811603, A1683160, AV734888, AV721366, AA648361, BE397723, BF970114, A1336575, BF306639, F37462, A1872164, AV694812, AW301344, AA830333, A1633321, AA678887, BE876047, AV706721, AA563942, A1245332, AA653346, BE740632, A1360195, BG177101, BG026443, AA437293, AV698290, AV706279, A1933756, AW102858, AW022121, AV656973, AW582932, AW238753, BG110384, A1345143, A1224463, AA836317, AL047398, AL041154, A1814841, A1621106, A1436429, A1364620, BE620084, A1343119, BG109221, AA100151, BF796402, AV760181, A1349012, A1627692, AA765010, BE885490, AW021373, BG033906, AV756956, AV764180, BE011885, A1559654, AC005551.1, AF217998.1, U91329.1, AK026600.1, AF197929.1, AL137555.1, AL133093.1, BC007797.1, AC004227.1, U68233.1, AK027114.1, AL359583.1, BC007534.1, AL137662.1, X86693.1, BC002688.1, BC004145.1, AF217991.1, AK025549.1, BC005094.1, BC008196.1, BC006147.1, BC007280.1, AL512746.1, AK000632.1, BC000007.1, AF111112.1, X53587.1, AL136816.1, BC006481.1, BC001128.1.</p> <p>AI524360, AA582463, AW970030, AW088049, BF845261, AV744082, BG166773, BF970654, AL137859.3, AC008784.6, AC022382.3, AC0079844.3, AB038490.1, AC007917.15, AL158070.11, AL136231.12, AP000555.1, Z96074.4, AC006430.22, AP001695.1, AL354811.13, AC078958.30, D87675.1, AL138849.12, AC004019.20, AL391415.12, AC079950.23, AL117694.5, AC004935.1, AL121834.20, AL109921.21, AC008551.5, AF200465.1, AC008892.5, AC068799.14, AC006036.3, AC005725.1, AC015982.9, AL391262.3, AC004104.1, AC005079.6, AL132988.4, AP000692.1, AL590116.8, AL158144.15, AC005305.1, AC003049.1, AL022313.1, AC005520.2, AL353135.32, AL117377.18, AC025887.4, AC004468.1, AC083876.2, AC004774.1, AC004634.1, AL121900.26, AC034198.6, AC006460.3, AC005522.2, AC018828.3, AC067742.5, AC022383.3, AL161655.8, AL445686.14, AL031224.1, AP000128.1, AP000206.1, AL021154.1, AC009006.6, AF111167.2, AL589782.7, AL590785.7, AC021016.4, AL133387.8, AC006115.1, AC026439.3, AL034394.2.</p> <p>AL529086, BE904120, BF337766, BF345489, AV706125, A1681123, BF002270, BF055322, BE856092, BE305227, BE219427, BF438375, BF149525, BF057786, BF590112, BF196165, A1741848, AJG36347, A1973055, A1554720, A1871117, BE220195, A1745311, A192924, A1W340966, AA706712, A1091179.</p>
HKMMW7 4	97	581399	1 - 1780	15 - 1794	
HLDON23	98	636083	1 - 1248	15 - 1262	

					<p>BF445900, BE645773, AI677802, AI889659, AI804323, AI688189, AW673266, AI298377, BE046787, AA535027, AW612722, AI830304, AW675294, AI139157, AW089901, AA410579, AW073842, AW316637, AA417232, AA416567, AI827376, AI372513, AA411560, AW001905, AI796719, AW673062, AI334363, AI085075, AI400032, AI452964, AA308319, AI888902, AI400560, T33187, AA877699, AI332395, AI372512, AA485507, AA017127, BG178589, R85136, AV705959, AL526358, BG056798, H94860, BF476221, AW016699, BE594282, R18537, AA988884, AI925753, AA993373, AW953175, W05059, AI263531, AA282629, F29641, R01402, AA625328, AI126985, AA354334, H58095, BE251679, AW662030, AI559961, AW337874, AA282410, AI014243, AI671403, R41526, AA485352, R43109, Z39066, BF925559, F04091, R01401, W04796, AV751453, BE871534, AA128150, AW375092, BF237662, BE155754, T25085, F17839, AW371533, N74669, AW058382, AW371557, BF063353, AL360256.1, AL117482. 1.</p>
HLDQR62	99	753742	1 - 2558	15 - 2572	<p>BE876197, AU133975, AW170131, AV723948, BG178057, AV652458, AW836234, AW608052, AA047046, BF104746, AA486037, BE395776, AW385580, AA488655, BE699041, AA932253, BG104619, BF671350, AA854943, AA418105, AA829456, AA243385, BE699051, BE936060, AI346694, AA418007, AA503398, AA053835, AW067836, AA878478, AI309218, BF820483, AA287990, W37960, AI401102, AI279485, W37900, AI423510, AA610711, AI050735, BF939011, BE699047, AA701403, W30974, AA017371, AW385388, AA911160, BF928600, H10281, W32542, AI133579, AV721259, H81907, BE908122, H11712, AA657490, H09562, R97956, BF810354, N68428, BF841567, AA018681, BF810349, AW838671, AW274397, BE699044, BF737894, H17436, AA133578, T03483, BF529092, BE699011, R93915, T84200, H10225, R97955, N91220, F09018, BE244933, BE697384, AW474873, Z43397, AA677745, F11358, AW838680, Z42508, H08994, H11779, R18755, AW067888, H86384, R20010, R44826, T78746, BE546845, BF768165, AA676360, Z41104, R12303, R61069, H80952, H01770, BF362799, AA857228, BE092626, AW361033, BE246721, R12953, F11514, AA298600, AA233314, H82000, Z45386, AA047038, AA988879, AA776420, R61792, BF925722, F02025, H37922, AA946813, AA058662, BE793798, AA298811, AW954042, AI024907, AA515707, AA579408, C02381, H38137, H80857, AA190438, AA059270, AW953912, W32541, AI253018, BF755527, AA252608, H39230, BF087406, BF841077, BE699066, F09175, AW608049, R36072, AW607934, AW242636, F02790, AA018740, BE092426, N47523, AW951415, BE872758, AA670010, BF793691, H86054, BE699208, AA017201, AA059226, BE857637, BG011131, AA233315, AW169463, BE935974, AA910836, BF756516, AA504287, AA489248, AW452612, BE858890, BE699076, AA953019, AA191764, BF930488, BE746764, AA552521, BF932022, BE080981, AW385586, BE092405, BE047109, AW838675, BE074538, AB046801.1, AC026749.5, AC026437.5, AC010491.3, AK001799.1, AF274753. 1.</p>
HLDQU79	100	740755	1 - 1474	15 - 1488	<p>BG256275, BE867624, BE907396, BE855521, BF034422, BF530803, AW959247, BE782005, AI126689, AI121446, AA757065, AW630129, BF768037, BE746763, AA206154, AA460401, AI276320, BF998689, AA295243, BE242732, BG035901, AL040350, BE242810, T86168, BF983867, W05088, AA347337, BG252443, AI133502, AF064093. 1.</p>

HLHAL68	101	684216	1 - 690	15 - 704	AA359084, AC018797.4, AF224669.1, AF283321.1, AC007883.3, AC006038.2, AC034251.5, AC006345.4, AC008149.14, AL355392.7, AC006057.5, AC084864.2, AL354720.14, AC084865.2, AC006435.7.
HLIBD68	102	778073	1 - 1008	15 - 1022	AL538046, BF975484, BG260893, BF062040, AW250850, AW954319, BG118275, AI633756, AI436560, BE646174, AA975057, AW302253, AI651397, AI825665, AI479926, AI635567, AI612806, AI640598, AI653427, AI248825, BF770160, AI333221, AA609320, AI916748, BF346659, AW001438, BF941021, AA397893, AI083783, AA399663, AA302889, AA484860, AI659648, BF222019, AI692578, R49550, AW016187, AA393712, AI673346, D80738, D81106, D81495, D81643, C15479, AI696498, C15522, R42643, AI761655, AA302888, D81794, D81487, D60344, AA302884, AA302883, BF813253, AA091824, BE743563, N49704, AI476597, D81533, N87760, BE396027, AA352126, AA281538, AA280240, AL133447. 1.
HLICQ90	103	791828	1 - 1752	15 - 1766	BF980403, BF726329, AI984197, AI192533, AI559494, AI378638, AA430026, AI061413, AW172705, BG165333, AI190915, AA430235, N62729, AI689890, AI360764, AA705532, H90333, H30177, T99745, H78217, T86019, H26993, T91236, AV645894, AA330598, N75483, H42449, BE766728, AW135351, AA976652, AA383620, BE220880, AI630095, BF381551, BF767606, BE087130, H42847, W05293, AA911697, AI659925, BE766726, H82733, T99746, BF889067, AW955970, AW971740, AI432644, AI431328, AI623302, AW968355, AI431347, AW972091, BE672759, AI432653, AI431230, AI432654, AI432655, AI431310, AI431312, AW081103, AI432677, AW968356, AI431323, AW972093, AW968729, AI431354, AI432661, BE672719, AI431307, AI431316, BE672732, AI431337, AI432650, BE672745, BE672748, AI431238, AI492519, AI432675, AI431350, AI431231, BE672767, AW972092, AI432651, AI432647, AI431243, AI431330, BF448552, BE672742, AI432662, AI431248, BE672644, AI432657, BE672774, AI432649, AW972090, AI791349, AI431257, AI432665, AI431247, AI431318, BE672738, BE672792, AI431235, AI431321, AI431315, AI431246, AI432643, BE672743, AL042519, BE672640, AW129223, AL042931, BE672622, BE672627, AI492510, AL042729, AL042832, AL047611, BE672754, BE672626, AL043295, AL357075.17, AF064854.1, AL133082. 1.
HLTHR66	104	699812	1 - 2272	15 - 2286	AW978874, BF507862, BF033134, AL135232, AI673052, AW612437, AW880652, BF508030, AW118937, AI912990, AI651420, AI754531, AI285856, BF431306, AI760176, AI805972, BF511821, AI123209, AW001864, AI377932, AI141443, AI743946, H19020, BE857717, AW962968, AI221575, AA588506, BF475287, AA026012, AI249502, AI660528, AI949710, R68887, AV653095, AA026000, R77684, H19313, AI460280, AA829761, AA357748, BF511571, R77685, BE671786, AA084602, AI687732, AW889295, BE002919, AI812062, BF365444, C21025, AL136231.12, AFI47395. 1.
HLTIP94	105	108733 5	1 - 1226	15 - 1240	AA52985, AA314716, BE778519, BE894256, BE779796, AA228139, AI802948, AC005325. 1.
HLWAA17	106	629552	1 - 983	15 - 997	AL522002, BF305304, AL521608, BE732838, BE899550, BF344719, BG115015, BG109203, BF982386, BE410162, BE735023, BE901175, BG117962, BE281306, BG165427, BF793440, BE901577, BE872442, BF316646, BE409982, BF982251, BF970528, BE262711, BE299415, BF340859, BE386152, BF569778, BE281612, BF305644, BG251248, BF673757, BF183244, BE547252, AL521166, BF237978, BG249255,

						BE280374, BE301893, BG109330, BG164142, AL522550, BE018945, BG170896, AW732476, BE779176, BE018944, AL532064, AW250139, AA580387, H20615, BE741195, BE736037, BE271217, AL752100, BE870251, BE742694, BE883834, ZA2865, W21970, AA873793, AW579408, BF753347, AA204913, AA206511, AA158660, BF971112, H66924, R25678, AA233944, BE743048, BE743976, BF304498, BE546682, BG112068, BF317329, BE278514, BF878947, BE744899, Z25248, BG248593, AW675147, T56764, AA368717, BE793472, AW956985, BE246887, BE298316, BE410692, BE707861, BF125052, BE388318, BF970723, BF675911, BE868990, BF031826, AA380216, AJ271671.1, BC007886.1, BC002563.1, AJ243649.1, BC003152.1, AF151829.1, AF132942.1, AJ243650.1, AC004832.3, AC005585.1.
HLVAC95	107	778075	1 - 298	15 - 312		AV764526.
HMDK33	108	561941	1 - 850	15 - 864		AL538273, AW139111, AA663592, AI582741, AL120259, H51572, AI122619, AI124509, BF366373, R86660, H50906, R86835, BF836623, BE884648, AF070673.1, AF030196.1, AL161976.1, BC005837. 1. R86660, H50906, R86835, BF836623, BE884648, AF070673.1, AF030196.1, AL161976.1, BC005837. 1. BE790239, AI114496, BE047613, AI609021, AI478544, AI949665, R96283, AI205799, W39248, AI670908, T70976, AA070919, AI243978, AW854183, AI796472, BF883407, AW975683, AA654405, AI125888, AA730911, AA545731, BE222003, AA730927, C21177, AA721678, AI478489, AL137139.9, AL139035. 27.
HMCFY13	110	635301	1 - 869	15 - 883		BF026299, BE277091, AI343297, BF027218, BE390121, BE387283, AL514638, BE388858, AI364111, BE389119, AI668959, BE391988, AW206551, AA676232, BE870993, BF002101, BE277034, BE729557, BE276352, BF125430, BF896609, BE386944, AW207225, AA551687, BE718320, BF131318, AI990714, BE693868.
HMDAB56	111	560676	1 - 1451	15 - 1465		AI075053, AW972336, AI199257, AA493693, N80663, AW879550, AL138455, AA633753, AA640410, AA640430, AW815064, BF820510, AA018283, AL037554, BG033220, BF822854, AV759329, BG033926, AL120343, BE062169, BF679557, AV757425, AI631355, AW129526, AV710289, BF868399, AW063373, BF437493, AW936354, AI094787, AW500029, BF915002, AA908411, AV760207, AV761925, AW975971, BF666395, BE858219, AV764035, AU137841, BF679274, BG002515, BF698704, BE064275, AA493136, AI700109, BE883107, BF699964, AI918465, AA507547, AI805123, AP002088.2, AC008014.5, AC009470.4, AC011450.4, AL133480.9, AL356244.12, AP000493.1, AC008521.5, AL353741.16, AC004638.1, AL139148.11, AC011475.6, AL158832.13, AC004634.1, AC005102.1, AL135749.3, AC010105.12, AC000088.2, AC019197.7, AL135214.12, AP000901.5, AC008891.7, AC021188.6, AL049776.3, AL117355.5, AC002128.1, AL450483.1, AC007774.1, AL080315.18, AC008622.5, AL135901.23, AP001692.1, Z84485.1, AC007097.4, Z84480.1, AC022415.5, AC008747.5, AC000082.4, AC020908.6, AF121897.2, Z98747.1, AC010422.7, Z84720.1, AL109921.21, AC0090944.1, AC0074338.1, AC007318.4, AL136219.17, AC004841.2, AC003109.1, U82668.1, AC003103.1, AC020977.5, AF057280.1, L44140.1, AC004774.1, AC011242.8, AC020913.6, AL354935.23, AC069080.12, AL389888.8, AC007036.3, AI136359.13, AC005746.1, AC006441.13, AL13453.3, AC084732.1, AL353194.13, AC004466.1, AC004253.1, AC025165.27, AL160175.5, AC005840.2, AP000251.1, AC007225.2, AL161779.32, AL033378.12, AL359397.3, AL022725.8.

						AL159977.10, AP001412.2, AF196779.1, AC025765.5, AC007388.3, AC016697.8, AC006023.2, AF334404.1, U52111.2, AC008896.5, AL121655.1, AP003117.2, AC009320.7, AC004087.1, AL121992.24, AL136304.10, AL138759.20, AL132128.1, AC006211.1, AL121752.13, AL157406.19, AC025418.23, AC007012.1, AC006548.20, AL354670. 4.
HMEED18	112	560775	1 - 1355	15 - 1369		BF967947, BF794640, BE744676, BE872383, BE261972, BF680443, BF967220, BE732377, AI417193, W95515, AW294641, BF306808, AI189166, BE856708, BE644954, AI949989, BF530795, AA628537, BE551422, BE747031, BE304795, BE735201, AI457735, BE870962, AI634510, BF131863, AI671536, BF242851, AI870629, AW514766, AI813311, AI862663, BE293244, AI768533, AI823596, AI129467, AI446582, AI435116, AI627345, AA972422, AI968606, AI088367, AI827354, BF439637, AI824877, BE220123, AV703921, AW236583, AI377591, AI040592, AA648774, AI095815, AW953613, D59730, D59523, AA029160, AW009152, AA054405, AI244209, AW023899, BE674038, BF059180, D59622, AA778356, AI470145, BF378975, AA970493, AI368877, D59801, AA129466, AI659586, AI344665, AI824866, AI803930, D59455, AA993837, D59633, R61441, AA704531, AW022576, AA484947, BF955158, D59447, AV725111, BE870487, AI082578, R35366, T74319, BF948389, D59583, D59781, R35909, AI365131, D59454, AW341984, BE467192, AI864239, D59649, D59777, H09254, T89104, AI128531, H23419, D59584, H09679, R23394, T77005, D59540, F13041, F10282, D80153, D80213, F10633, D59650, AA333625, BF855208, D59537, D59800, D59536, AI867775, AI702258, D80146, D59825, D59539, R25274, AA301260, D59438, H23420, D80341, D59769, D80323, AA827217, D59439, D59794, D59473, AA319561, R38088, R44178, R20566, D59692, F16283, D80260, R61396, D59749, AV726311, AA095729, D59772, AI088314, BF967226, AI383053, D59813, H22900, R14241, D59752, R40536, T34343, BF510049, F13475, D59782, AA346675, D80245, AI434889, Z43638, D59459, AW303981, D80381, BG054921, AW291373, D59812, AI418992, BF948033, AW516233, AI434666, BF837006, AW816352, AI356833, BF771676, AW340432, AA331587, AA332355, BF156021, AF353992.1, AK026257.1, BC008873.1, BC006150.1, AL512689. 1.
HMEFT54	113	520307	1 - 582	15 - 596		AI925461, AI187417, AA527170, W51933, AA534506, AI699870, AA430389, AW264729, AA284284, D20078, AI350867, AW131222, W48637, AA400891, AI458334, AI168826, AA400960, BF590627, AV719049, AV699669, AI557751, AW962245, AW975618, AA365173, Z21582, C14298, C14331, C15076, AV699550, AV724520, AW973541, AV718692, AW950117, D80064, AV719758, AV718489, AW949498, D59787, D59467, AA526218, AA701131, F13647, AW817409, AA434346, D80164, AV729929, AW964468, AI201668, D59889, D80195, AA507526, AV720791, AV718530, AI694178, D81030, BF382730, AV720203, AW960553, D50995, AV700889, BE148028, AU119190, R20046, BE001177, AW949645, D80196, BE748599, D51423, T41134, BF837744, AV718800, BF876179, D80212, C14227, BC002933.1, AK026989.1, AF254260.1, AL136917.1, BC008301.1, AF086205.1, AF254860.1, AC090939.1, AC005230.1, AF037338.1, AC004823.1, AC004922.2, AC020716.3, Z95116.1, AC025166.7, AL445184.11, AC009131.6, AC006581.16, AC010530.7, AP000172.1, AC003101.1, AP000057.1, AC005038.5, AP000125.1, BC005232.1, AC002407.1, AL031985.10, AC007308.13, AC002492.1, AC007021.3, AC012476.8, AP000688.1, Z98884.11, AC006241.1, AL355312.24,

					AL354932.26, AC004526.1, AC007387.3, AF283320.1, AC008543.7, AC034193.4, Z83851.17, AC005529.7, AC007193.1, AC018828.3, AC022383.3, AL158159.14, AC018808.4, AP001721.1, AC083873.3, AC004476.1, AL136365.9, AL096791.12, AC008009.4, AC005670.1, AC008524.6, AL01673.19, AL139317.5, AC005531.1, AC008397.7, AF215937.1, AC011811.42, U80017.1, AC006071.1, AL158828.14, AC008969.5, AL590002.7, U53331.1, AL354685.17, AL157877.11, AL442203.12, AL096701.14, AL160269.14, AC006312.8, AL512600.5, AP000030.1, AL445237.16, AC010271.6, AC010326.6, AC006571.12, AL034379.8, AC004685.1, AL023807.6, AC022415.5, AL121747.41, AL161669.5, AC000025.2, AL121886.22, AC018663.3, AC020983.7, AC010183.6, AC073366.3, AL359402.3, AC005015.2, AC005527.3, AC005823.1, AC026464.6, AL138878.10, AC005585.1, AC006480.3, AC010422.7, AC004832.3, AC004973.1, AC005039.1, AC004825.2.
HMEGF92	114	520304	1 - 615	15 - 629	T65556, BF952979, F09666, AA995112, AA983746, AA983748, AP001972.4.
HMSDL37	115	973996	1 - 2483	15 - 2497	BF358189, BF358186, BF358188, BF673854, AV762975, AA481760, AL042906, BE908602, AU154050, AU158859, AI310464, AA113159, AV718718, AW080062, AI952885, AL042905, BG029899, AA679794, BF813805, BE206133, AL048969, AI132963, AW401509, AV700988, AA113272, N49425, BF968610, AW975169, AA524604, AW157616, BE300645, AW008089, AV699423, AW976010, AV700654, BF679169, AI016704, N80210, AW151713, AU117926, AA427470, AW957502, AV760701, AI631119, N48230, BE895796, AW962035, AW979158, BF673743, AL534685, AA833875, AA833896, BF926318, BE061906, AA081138, AL044339, AW268329, AW960015, BG254652, AW600804, AU140392, BF820678, BF668559, AV764259, AA572968, BF736198, AV734543, BG222875, AW897556, BF892846, AC022001.3, AC018811.4, AC018494.6, AL353810.9, AC005553.1, AL139396.17, AL020995.14, AL163151.1, AL021918.1, AC022534.7, AL135903.12, AL161443.13, AC007912.6, AC018684.3, AC019052.7, AL163248.2, AJ400877.1, AC006313.1, AC022401.3, AC025165.27, AF274857.1, AL445186.4, AL137782.9, AL139322.13, AL355520.8, AC003065.1, AC004813.2, AE000659.1, AL139109.14, AC027670.4, AC021396.6, AC005033.1, AC007251.3, AC015723.8, AL392106.4, AC004073.1, AC007963.7, AC006544.19, AL353788.33, AL133500.3, AL512641.9, AC010376.5, AC073964.3, AC004650.1, AL157955.5, AL358372.11, AL359077.10, AL137918.4, AL035608.11, AL138783.6, AL135924.11, AP001189.4, AP002453.3, AL133373.5, AL391122.9, AL023876.2, AL163209.2, AC021093.16, AP001719.1, AC068643.27, AL121755.23, AC007068.17, AL359332.2, AL133241.3, AC007611.5, AL357060.31, AC078841.4, AL138880.14, AL159140.4, AL513264.8, AL138920.11, AC004021.1, Z92547.1, AC068102.4, AC089987.26, AC009289.8, AL163280.2, AC010282.5, AL157827.17, AJ006997.1, AC005066.1, AL163303.2, AC009122.8, AL035090.10, AL359205.15, AL133417.10, AC090497.2, AC007097.4, AC005280.3, AL359400.4, AC010591.8, AL354868.10, AP001718.1, AF131216.1, AC068312.4, AL109865.36, Z84480.1, AC009404.5, AC006543.7, AC007510.6, AL160162.11, AL354942.10, AC005862.1, AL136090.12, AC084882.2, AL353812.13, AC022740.4, AC008863.7, AC018797.4, AC006348.3, AL359644.10, AC008701.5, AC087427.2, AC074391.5, AL035407.15, AC010292.7, AL512310.3, AC020717.3, AC010885.8, AF235098.1, AL161629.10, AL035468.3, AC007447.6, AC007455.7, AC007385.3, AL390121.6,

					AC021351.4, AC009499.4, AC021849.5, AC010904.10, AL034410.8, AC010726.4, AC011701.22, AP001713.1, AL160281.17, AL357150.7, AL109854.10, AL035661.16, AL355530.6, AL138479.4, AC073125.5, Z95126.1, AC068139.5, AL390731.9, AP002006.5, AL161938.6, AC073150.7, AL117345.21, AC066593.4, AL391868.15, AC068993.14, AC010585.6, AF279660.2, AL161892.9, AL121895.26, AL022241.2, AL035697.19, AC002403.1, AC026882.5, AL021940.1, AL445495.5, AL049875.2, AC018653.29, Z93015.9, AL117693.5, AC010638.7, AP001981.5, AL390838.26, AC008962.8, AC004852.2, AP000751.4, AC020941.5, AL160397.17, AL158167.15, AF188030.3, AL121932.19, AL590239.7, AL356379.10, AL390039.10, AF205588.1, AC007938.1, AL031294.1, AP003438.2, AL050308.9, AF002223.1, AC006028.3, AC011246.6, AL137129.4, AL162455.14, AC080094.5, AC005183.2, AJ006345.1, AF106564.1, AC007739.2, AC010127.12, AL392044.7, AP000577.4, AL132987.4, AL135841.11, AC01286.1, AC066611.6, AC073532.18, AB026898.1, AF003627.2, AL162430.15, AL512359.2, AP001720.1, AL136520.3, AC073917.19, AC024367.6, AF224669.1, AL161804.4, AP003477.2, AL359763.9, AC025263.22, AL163301.2, AC004933.1, AL356108.12, AL359693.11, AC022407.6, AC022468.5, AL121900.26, Z82206.1, AC011497.6, AC034305.6, AL035671.5, AC008280.4, AL117337.25, AL022163.1, AP001731.1, AL158147.17, AL354750.12, AL359292.12, AC007717.8, AL132774.20, AL050305.9, AL118557.5, AL356421.10, AC019233.7, AL355615.12, AL034384.1, AC010422.7, AC013242.7, AL356125.13, AC005058.1, AC006288.1, AL161908.13, AC009479.4, AL360231.16.
HMSFI26	116	560229	1 - 1203	15 - 1217	BF902399, W89152, BE391139, AW975663, AA767864, AW020255, AW021440, AI024622, AA730474, AA551532, AC069548.4, AC004906.3, AC004675.1, AC006965.3, AF088219.1, AL121574.19, AL139109.14, AC004813.2, AL162231.20, AC013734.4, AC012459.7, AL157955.5, AL391827.18, AC022407.6, AL034422.24, AC004216.1, AC011551.3, AL355336.15, Z83822.1, AC010252.3, AC008720.6, AL391122.9, AC000353.27, AC012377.5, AC011816.17, AC004408.1, AC007363.3, AC073101.7, AC010092.4, AC016396.5, AL117355.5, AC022201.4, AF235098.1, AL157372.18, AC007228.1, AL445237.16, AC008066.4, AL591770.1, AL162831.5, AP000355.1, AC026770.6, AL353588.25, AC006461.2, AC005840.2, AC005912.1, AC011456.2, AC009137.6, AL035079.14, AB042297.1, AL365400.19, AC003950.1, AC027126.4, Z98884.11, AL034369.1, AL031670.6, AC090955.2, AL157893.16, AC004685.1, AL133500.3, AC011497.6, AC018500.3, AL158206.8, AC019171.4, AC025168.7, AL034346.31, AC005736.1, AL133279.7, AL391724.7, AC002565.1, AP000284.1, AL080315.18, AL133410.31.
HMVBS81	117	639203	1 - 515	15 - 529	AW080812, AW082817, AI951822, AW328562, BE138773, AI453744, AW246456, AW248692, AI953814, AI9516922, AW166193, BE741575, AI189652, AI545478, BE207752, AW051430, AI143755, AW631158, AI378866, AA602780, AW166148, AI346750, AA402608, AI191618, AA643353, BE207747, AA703840, BF969135, AA503856, AI991172, AI150232, AI885695, BE312018, AA599791, BF940193, AI951334, AI1192449, AI423588, AI089026, AI564055, AI160783, BE904552, BE675401, AA722619, AI333580, BE465600, AI147788, AI701929, N39330, AI806345, AA740539, AI359694, BF569026, BG111020, AW078736, W42999, AA915948, BG231541, AI453740, AA845228, AI128902, AI262427,

					BG111584, AW005011, AI191380, AA838219, N93880, AL529784, AI289245, AA975577, AA654241, BE270980, R17925, AA455946, AA858122, AL529713, AW070627, AW068993, AA480313, AW249124, AL530076, AL044257, AW381690, AW381728, AI073423, AW606063, AW381754, AW381773, W40373, H84216, AW381761, AW381723, AA032144, AW381716, AA639632, BE151932, AI284233, AW606042, AW606073, AL530075, AW381757, AW381711, BE151941, AW606072, H82810, AW328561, BE151934, AW606039, AI001133, D20808, F35123, AW606054, AW381758, F21453, BE909136, AI866123, T50401, AL526916, AA126629, AA282016, AW881457, AA308337, AA134834, AW364188, BG024191, AL529714, AI220753, AW601155, AI186566, H48575, BE908027, BE265069, AW469208, BF531105, AW182036, BE733058, AI202946, BE409400, AW250560, BE408657, AA774739, BE514152, AI902442, AA448447, BE792882, BE269512, AW951942, W45258, AW381677, AW885253, BF125578, AW885254, AW996198, H48844, AA402390, AI874330, AA032143, BF806199, BC001299.1, AF004876. 1.
HMWDC28	118	460487	1 - 1132	15 - 1146	BF51110, BF511098, BF507863, W52839, AW194969, AI199267, R68505, AI521938, R46033, W81166, BE000169, N47371, BE814496, W81165, AA086195, T64991, AI827849, AI816972, BF592053, AI797732.
HMWFT65	119	562063	1 - 1332	15 - 1346	AW795416, AL121287, AL133445.4, Z85996.1, AL034548.25, Z98304.1, AC004953.1, AC068799.14, AC074121.16, AC004905.1, AL031431.8, AC003982.1, AC006487.8, AC005971.5, AL050335.32, AL009181.1, AC010271.6, AC006483. 3.
HNEEB24	120	553558	1 - 1065	15 - 1079	BE695767, H18634, R4271, AA022988, AA454219, AA454220, AA022950, AA429414, BF112103, AI183463, AW293235, AA584870, AI608821, AA564655, AI467968, H69890, Z95152.1, Z77249.1, AC004837.1, AL050335.32, AC009399.5, AF222686.1, AD000090.1, AC069539.4, AL139080.11, AL117338.15, AC005000.2, AP000427.3, AF039905.1, AC027319.5, AC004996.1, AC010328.4, AP000043.1, AP000111.1, AP001716.1, AP000424.3, AP000292.1, AC073321.4, AL133330.14, AL138743.5, AL050338.12, AL445423.13, AC068715.5, AC009003.7, AL450026.10, AC008493.4, AL355334.26, AC002300. 1.
HNFFC43	121	753337	1 - 2089	15 - 2103	AL048903, AI678076, BF527660, BE728354, BF317174, BE409263, AL530934, AL042801, BE729268, AL041340, AL530935, BE314879, AL042802, AW190561, BE313085, AI961484, AU154235, AU132769, AW027201, AI424792, AL524550, AA864499, AI432437, AA917094, AI934618, BE327057, BE383358, AI499074, AI344032, AI955647, BG253760, AA572961, AL048902, AW769938, BF509684, BE208853, AI342638, AI761488, AW732625, BE259667, AW974120, AI564533, W51904, AW961340, AI289643, AW971194, AW272378, BE297579, AI867205, AI796156, AA884306, BF002574, BF927739, BE885728, BF847648, AA456581, AA918441, AL524551, BF918942, AI766564, AW769937, AA493778, BF918936, AA304712, BF869582, AI168435, AU126961, AA298993, AA377693, AW769673, AI383037, H67555, AA322347, AA221032, AA713594, AI366484, AL039675, BE273248, F24965, AW797208, AA426295, AA322180, AA322590, BF919454, BF919453, BF919451, AW178871, AI538564, BF752997, AI766348, AI701097, AW080090, AI367680, BF812961, AI619820, AI633125, AI828682, AI818240, AW152182, BF811804, AI796113, BF968679, BF669151, AI800648, AI500714, AI702073, AI8884318.

AI590043, AI868680, BG122005, AA740450, AI866469, AI971615, AI345415, AI934259, AI570056, AI433157, AI046466, AI819545, AI499570, AI698391, AI440448, AI915291, AI434731, AI445829, AI889189, AI638644, AI370623, AW188525, AW008226, AI699823, T69241, AI635634, AW148363, AI818350, AW089844, AI686817, AI376425, AI609375, AW051088, AI744268, AI736995, BF970652, AI569637, AW163834, AI270295, BE393784, AI471282, AW075381, AL043355, AI872423, AI801460, AI620864, W74529, AI421252, BF812938, AW081256, AI581362, AL513817, AW193911, AI670009, AI871697, AI537261, AI950729, AV709679, AI651840, AI281757, AI619502, AI591387, AW168822, AI473536, AW196720, AI345612, AI620056, AW834282, AL046595, AI677796, AI582932, N21402, AI922266, AI500061, AI474646, AI345416, AW079409, AA641818, AI621341, AI702068, AW081383, AI633198, BF814761, AI619662, T49776, AI565172, AI696714, AV747571, AI524179, BF766531, AI366900, AI521560, BF925771, AI927233, AI536638, AI479292, AI564719, AW027898, AI419826, AI432969, AI432030, AI799183, AW238688, AI932966, AI354643, AW168788, AI401697, AI357940, AI890214, AW078712, AI250627, AI636507, AI357273, AI634345, AI579901, AI352497, AV711455, AW104724, AL514079, AI783825, AI612852, AI956080, AI524654, AW104827, AI445025, AI815232, AW198090, AI684244, AL513761, AW078606, AW083374, AA830709, AW192652, AK001356.1, AF260728.1, AL137599.1, AK001651.1, BC008337.1, AB033000.1, AF351620.1, AF183393.1, AL389935.1, BC003573.1, AK026408.1, AL117587.1, BC008591.1, AL080159.1, BC006103.1, AK026462.1, AL137530.1, BC002466.1, AK026744.1, AK026593.1, BC003101.1, AL133075.1, AL137537.1, BC005825.1, AK000418.1, AL136850.1, AL023657.1, BC001199.1, AK026389.1, BC004945.1, L19437.2, BC004349.1, AL122104.1, AL050149.1, AL389982.1, BC006181.1, BC001964.1, AB047878.1, BC002631.1, AL050138.1, AB050410.1, AB050421.1, BC006345.1, AK000414.1, S76508.1, BC008686.1, AF115392.1, AL389947.1, AF232009.1, AL050155.1, AL050366.1, AB050510.1, AK026464.1, AF131821.1, AK027144.1, AL137533.1, BC003658.1, AF245044.1, AB052176.1, AL137711.1, AF274348.1, AF274347.1, AL137480.1, BC002733.1, AL359941.1, AL133637.1, X82434.1, BC008364.1, AL080146.1, BC004925.1, AB060897.1, BC005168.1, AB056421.1, Z82022.1, BC002970.1, BC003590.1, AL353940.1, BC001844.1, BC004264.1, AL049452.1, AL117416.1, BC008717.1, AF132730.1, AB050431.1, AF090903.1, D83032.1, AK026633.1, AK025889.1, AL162083.1, AL137271.1, AF218006.1, BC003569.1, AK027204.1, BC004336.1, AL583915.1, BC001655.1, BC006287.1, X99971.1, AL080148.1, AL110280.1, AL137476.1, AF205073.1, BC008063.1, AB060916.1, X59812.1, BC003684.1, AL137292.1, AL133077.1, BC006487.1, AK027096.1, BC001785.1, AK027173.1, BC006410.1, S77771.1, Y14314.1, AL133062.1, AL050143.1, AF044323.1, AF195092.1, AY033593.1, X15132.1, BC003410.1, BC005678.1, AL080154.1, AK000636.1, AB055331.1, AF339775.1, AK025435.1, BC008037.1, BC006458.1, AL122100.1, U73682.1, AL133619.1, M85164.1, AF230496.1, AL442083.1, AL137574.1, AF285167.1, BC005002.1, AF169154.1, AF038847.1, AL136615.1, AK027095.1, AL162003.1, BC003056.1, AL390184.1, BC007571.1, AK025350.1, AL110221.1, AK024747.1, AF262032.1, AF106862.1, AL136805.1, AL133665.1, AC006288.1, AF002672.1, AK026556.1, BC004181.1, AL133084.1, BC002365.1, AK024992.1, BC007206.1, BC000550.1, BC006091.1, AB048913.1,				
---	--	--	--	--

					AK026746.1, AL110158.1, AF184965.1, X78627.1, AB047627.1, AL133623.1, BC009294.1, AY034001.1, AK026532.1, AL162002.1, AF026816.2, BC000199.1, BC008649.1, BC003591.1, AJ299431.1, Y13350.1, AK025099.1, BC004362.1, BC007460.1, AL512733.1, AB056420.1, BC008075.1, BC000090.1, AK025798.1, AF106697.1, AL136889.1, AL136893.1, AF199509.1, AF124728.1, U37359.1, AK025113.1, BC008078.1, BC004556.1, AF202636.1, D44497.1, AL133049.1, AF061573.2, AL157433.1, AL136784.1, BC008417.1, BC005070.1, AK026528.1, AL137478.1, X83544.1, AB060834.1, AL136844.1, AK000266.1, AL357195.1, AK027160.1, BC001305.1, AL137488.1, AL117435.1, X99226.1, BC004222.1, AL137550.1, AL161628.9, BC007021.1, Y14040.1, AF218000.1, AF141289.1, AK026613.1, AL117460.1, AF126488.1, AL080139.1, AK027365.1, AJ296345.1, AL137298.1, AL137716.1, Z35309.1, AL137627.1, AK000476.1, AK026550.1, AL359624.1, AL389939.1, AB048953.1, AL512684.1, BC000253.1, BC002370.1, BC002849.1, AF217987. 1.
HNFIY77	122	634551	1 - 1198	15 - 1212	BE778688, AA350580, AW451334, BE247283, BE242191, AI640492, AA078462, BE242141, AW003105, AA336368, R54889, AI910199, AI871293, AI267818, BF204188, AI858691, AC009412.6, AC072052.6, AL033517.1, AL161747.5, AC018897.4, AC005663.2, AL139095.15, AL135744.4, AC008072.3, AC005484.2, AL121897.32, AF000359.1, AC079141.7, AC020955. 6.
HNFJF07	123	577013	1 - 602	15 - 616	AA487061, AA486615, D78759, AC002091.1, AC004089.25, AC005015.2, AC039056.7, AC006329.5, AC005081.3, AC084693.2, U91323.1, AC002352.1, U82668.1, AL391259.15, AL109897. 30.
HNGFR31	124	553552	1 - 522	15 - 536	AL1360297.12, AC005023.1, AC022124.5, AC008390.7, AC004836.2, AL136984.20, AC009558.14, AL117373.14, AP002350.3, AC006265.1, AC007057.3, AL139233.8, AC005079.6, AL359824.17, AP001541.4, AP000426.3, AJ239322. 3.
HNGJJ31	125	519120	1 - 782	15 - 796	AU147901, AA376128, BE562634, AC051619.7, AC020629.6, AL445531.10, AC009412.6, AC005052.2, AC079383.17, AL009172.1, AC016637.6, AK022380.1, AC004032.7, AP000555.1, AC009789.21, Z83851.17, AL359643.27, AC011005.7, AC008521.5, AC008635. 6.
HNGJE50	126	561568	1 - 1023	15 - 1037	
HNGND37	127	839224	1 - 827	15 - 841	AA774312, BE670568, AI298480, BE702731, AI088824, AI149772, AA976633, AI870274, AA010606, AA010607, AW957725, AA010628, T33898, T75431, AI355909, AC005300.10, AC006946.20, AF307451. 1.
HNGOI12	128	104137 5	1 - 2114	15 - 2128	AJ006345.1, AC005950.1, AC003675.1, AC001228. 1.
HNHEU93	129	634851	1 - 734	15 - 748	AW502688, AW410844, AI444575, AW504667, AW157128, AV758849, AW974923, AI038029, AA533011, AW021674, AW731858, AA618531, AA534289, AA557945, AA046906, AI065031, AW963552, AL121039, BG180320, AI702049, BG059139, AA157876, BE080768, AI567676, AI745666, AV732057, AW953437, N72678, H53546, AL044966, BF942991, BF679568, BF724416, AI003068, BG059924, AA640305, BF439153, H47461, AA507623, AI921744, AA935827, AW265468, BF589864, AA831714, AW020682, AI572680, AA601336, AI791720, AI791408, BE049409, AI114755, AW962971, AI828721, AU158433, BE244547, AI251024, AV730440, AW148821, AW474825, AA631915, AI791659, AA595661, AA610644, AW023975, AA657392, AW029626, AA834891, AI884404, AV743067,

AI890283, BF944618, AI609992, AI797998, AW970856, BG2233384, BE677164, BE150831, AW836225, AA658890, BE882869, AI031759, BF913232, AA493245, N55076, AA019793, AA523718, AI888050, H48017, AW576388, AV763460, AW192930, AI076729, AW021847, BF431825, AA652675, AI708565, AA315052, AI734076, AI281622, AI064968, AI538404, BF950367, AI138262, AA632355, BE676988, AA527633, AI052366, AI445699, BF849260, AI634466, AW960129, AI523272, AA411337, AI640905, AV729090, AI312267, AI570067, AV728973, AW675677, AI701898, BE676910, BF973510, AI889614, BG250794, AI571094, AW239465, BF725844, R92703, BE391183, AW028376, AA578711, AI590005.6, AC055740.17, AC090950.1, AI161757.4, AI391375.11, AI158063.12, AC022542.4, AP002898.1, AI161779.32, AI109804.41, AI157700.13, AI136123.19, AI359397.3, AI359273.11, AC007597.3, AP001781.4, AI121932.19, AI109847.5, AI109825.23, AI163209.2, AI390838.26, AC011740.7, AI138880.14, AI137918.4, AI139109.14, AI031229.2, AI035427.17, AI354937.12, AC005303.1, AC006249.1, AC006487.8, AP001713.1, AF334404.1, AC002312.1, AC018653.29, AI138499.4, AP000486.5, AC0072061.8, AC005181.1, AI137818.3, AC011816.17, AI162430.15, AI158167.15, AI035400.13, AP000263.1, AI109758.2, AC005844.7, AI139396.17, AC025165.27, AP000080.1, AI354696.11, AC008651.7, AI354861.11, AI157915.3, AC010585.6, AC007256.5, AI513548.8, AC005779.1, AC007912.6, AI360227.17, AC008280.4, AC012150.16, AI109627.18, AC025436.2, AC008498.3, AF205588.1, Z95327.1, AI355305.9, AC068319.4, AI136418.4, AI139034.1, AI357075.17, AI022578.1, AP003548.2, AI132778.6, AB026898.1, AI132709.5, AI121989.12, AC005972.1, AI163301.2, AC002302.1, AI137129.4, AC034191.5, AC002550.1, AC007097.4, AI139021.6, AC006079.1, AI139095.15, AC011247.10, AI138755.13, AI021808.1, AC073964.3, AI121594.6, AI137782.9, AC016950.8, AI133328.13, AI137128.4, AC022367.34, AI138920.11, AC025207.5, AI357150.7, AC008536.6, AC005291.1, AC005754.1, AI049712.12, AI354816.5, AI513342.7, AI390039.10, AC002990.1, AF111167.2, AB020868.1, AI022069.1, AI355343.18, AI160411.25, AC005036.1, AC018719.4, AI139389.16, AC005228.1, AC002996.1, AI049835.3, AC090509.1, AC010000.5, AC090005.1, AI161936.15, AC020558.4, AI583856.6, AP002392.3, AI031643.1, AE000661.1, AC016608.5, AI162853.17, AI031659.9, AC005079.6, AC009953.4, AI121865.7, AI109854.10, AC002395.1, AI391601.6, AC073125.5, AI161892.9, AI133373.5, AC019184.3, AC009137.6, Z84483.1, AC002381.1, AC017099.11, AI162426.20, AI136234.12, AC009955.4, Z99716.4, AI117337.25, AI138743.5, AC011005.7, AC007543.4, AC004847.3, AC008901.5, AC009961.11, AI135783.6, AF229163.1, Z84480.1, AI122057.4, AI035455.30, AC016644.7, AI400879.1, AI590387.7, AI158828.14, AC089985.14, AC069548.4, AC016831.1, AC009481.4, AC027129.5, AI022165.1, AI162503.12, AI022067.1, AC016705.4, AC002524.1, AI137140.12, AI109865.36, AC010583.5, Z98036.1, AC008518.3, AC008155.9, AI079295.1, AI033527.26, AC007277.2, AC007363.3, AI162231.20, AC013751.6, AI163218.2, AC068724.7, AE000658.1, AC006543.7, AP001646.4, AI451075.15, AC020601.10, AC012157.20, AC006581.16, AI360232.24, AP002534.1, AI132986.4, AC000353.27, AC007308.13, AP001727.1, AC008268.3, AI049646.19, AC006461.2, AI356118.15, AI445483.13, AC007345.5, AI442167.1, AC007956.5,					
---	--	--	--	--	--

HNHF14 HNHNB29	130	664507	1 - 283	15 - 297	AC006544.19, AC008569. 6. AC020552.4. AI049955, AA904211, AI921765, AU146342, R98218, BF725178, BF337320, AA515728, AL524675, BF72474, BG057207, BE675681, BE063437, BF804385, AI962030, R74433, BF724699, AV656063, AI499954, AI653776, AI523074, AI362442, AU118374, AW023302, AW957372, BE150793, AV763026, AV763058, BE281645, AW410354, AL038842, AW963444, AW403829, AA503298, AI709307, AW023111, AA825827, AV756491, AU158454, BF877926, AA713705, BG236484, AI735609, AW082104, AW780190, AV760014, AI254779, AA558404, AV719392, AA502532, AI114704, AA833875, AA833896, AA832145, AW957600, AA644090, BE072475, AW575605, AV703785, AW503420, AW973992, AI802087, BE301610, AW302017, AV738383, AW237905, AI859438, BF760573, AW962611, AV733437, BF944736, AV647070, AW513789, BG110818, AA581247, AI687343, BF854308, AW970958, AW615560, AI755057, AU157093, AI821987, BG222875, AA714110, AI732869, AA811741, AW849714, AL079734, AI889995, AA452887, AW978041, AV740009, AV764259, AA084609, H63660, AI587349, AW965008, AW190484, BE677244, AW501542, AW236219, BF217723, AA056248, AW843204, AV695478, AA633875, AW978591, AW192373, AW957154, AA604831, AW303872, AI141130, BF977305, AA297776, AI160786, AU151428, AU150634, AW083934, AA613624, AW051819, AI961983, BE968477, AW510513, AI417469, AC084881.19, Y10196.1, AL357515.26, AC005736.1, AL139396.17, AL356415.26, AC006241.1, AC006121.1, AL590763.1, AL022316.2, AL096677.21, AC016597.4, AF053356.1, AC002996.1, AL158040.13, AC012320.6, AC013434.8, AL109843.25, AC009194.8, AL356020.3, AC002425.1, AL133448.4, AC020916.7, AC005081.3, AL161731.20, AC078846.2, Z83819.1, AC011247.10, AL139317.5, AL022323.7, U95090.1, AC007225.2, AC083884.6, D86995.1, AC020913.6, AL356915.19, AL050349.27, AC023425.20, AC034242.5, AP001705.1, AC008946.6, Z95331.2, AP002008.5, Z98752.16, AC003920.1, AL157838.24, AL135839.15, Z93023.1, AC002045.1, AC005522.2, AC010419.5, AC016655.6, AC008616.6, AP001718.1, AL161669.5, AL035684.25, AP001752.1, AC002369.1, U95739.1, AC026794.4, AC015982.9, AL121586.31, AC009087.4, AC026202.6, AC008733.7, AL133477.16, AC005015.2, AL023575.1, AC007685.2, AC008397.7, AC018644.6, AL137061.12, AP001922.4, AC011442.5, AC006430.22, AC008766.4, AL132639.4, AC018821.4, AC006334.3, AC002492.1, AL157372.18, AC002073.1, AP000501.1, AC011465.4, AC022404.7, AC018639.8, AL135783.6, AL358434.16, AL031295.1, AL353807.18, AL157791.4, Z99716.4, Z83844.5, AP001709.1, AL031311.1, AC006040.3, AC067941.7, AC009032.7, AC007404.4, AL022326.1, AC018523.9, AC008755.6, AC008622.5, AC009996.7, AC008403.6, AC000353.27, AP001728.1, AP002007.4, AP000152.1, AC011287.4, AL021026.1, AC009050.1, AL049643.12, AL392106.4, AP001711.1, AC006028.3, AC008745.6, Z83822.1, AL136040.5, AC025280.4, AC010150.3, AB001523.1, AL159191.4, AC078957.16, AC020906.6, AL096701.14, AL138920.11, AC010271.6, AC022116.5, AL162426.20, AC004685.1, AC025159.28, AL139353.3, AF139813.1, AC007462.2, AC008904.6, AC013355.7, AL390241.19, AC022217.5, AC009165.6, AC004491.1, AP001670.1, AC007546.5, AL121899.37,
	131	895462	1 - 1880	15 - 1894	

					AL162584.9, AB000882.1, AL121652.2, AC004000.1, AL139099.2, AC034251.5, AL136300.22, AC022425.6, AL031843.2, AL163032.3, AL162503.12, AC011472.7, AC009365.9, AL049757.14, AF001753.1, AC007249.5, AL354864.16, AC005006.2, AL117381.32, AC007205.26, AC027644.9, AC011508.4, AC074344.5, AL365475.1, AC002375.1, AF104455.1, AC000134.14, AC004840.3, AL139186.16, AC007383.4, AP002851.2, AL118497.9, AL137078.20, AL022159.1, AC003025.1, AC005014.1, AC011479.6, AC007220.4, AC007242.3, AC084865.2, AL109759.4, AC012099.4, AL035604.15, AC005088.2, AC005666.1, AC006013.3, AC006205.7, AC084732.1, Z98044.13, AL137853.12, AL118502.38, AL390211.1, AL078461.38, AC008264.10, Z83826.12, AF124523.1, AC004975.2, AL133153.3, AL158214.33, AD000671.1, AF312915.1, AF279660.2, Z94044.1, AL021546.1, AC009269.6, AC010742.4, AF196779.1, AL031228.1, AC004099.1, AC008962.8, AC008626.5, AC011452.6, AL354735.14, AL354928.9, AC002314.1, AL449264.18, AL118506.27, AC021016.4, U80017.1, AC004477.1, AC008738.6, AC003085.1, AC004230.1, AJ295844.1, AC007114.7, AL109801.13, AC010378.6, AF200465.1, AJ300188.1, AC004832.3, AC005057.2, AC020915.6, Z97054.1, AC007664.12, AC009220.10, U91326.1, AL031433.4, AP001727.1, AC004757.1, AL109798.19, AC008074.3, AC003962.1, AC005228.1, AL133551.13.
HINHOD46	132	843488	1 - 1341	15 - 1355	<p>AV700498, BG164166, AV700988, AV700545, AL037632, AV762783, BG260565, AV714931, AV760723, AF074667, BF792326, AF034176, BE796439, AW962035, AW976010, AA524604, AV760360, BE541237, AU118837, AV719941, BF678427, AL138265, AW188427, AV733710, AL048626, AU117926, BE909125, AV764490, AU119532, BE067011, AL534817, AV699709, AV686853, AV722030, BE393367, BE538259, AA708751, AL732911, BF346320, AW970915, AA526787, AW131249, AU147226, AV763174, AV760497, BF805173, BF968141, AV762900, AV759711, AV759356, AV760364, BF307044, AV762902, BF679169, AV759686, AV762779, AW963982, AL042906, AV759684, AV762001, AV759683, AL135377, AV734543, AW408643, AU155227, AV759046, AA601355, BF913258, BE273856, AL044340, AA081138, AI952885, AA584482, AV734401, AL042905, AV722075, AV737621, BF666736, AA211734, AW080062, AV762002, AV761309, AI791227, AW961160, AV763305, AI038990, AV759172, AW102955, AA708108, BF381650, BF828714, AI685198, AI679294, BE066950, AV763952, AA831913, AI679871, AU145521, AI204309, AW151713, AW069670, AA481760, BF892846, AW130036, AV763135, AU140392, AA284247, AW102811, AA722372, AW008212, AU158859, AA640277, U51704, AU155168, BG258140, AW088689, AU155048, AA577824, BE387734, BE867712, AL119123, AW079809, AA601326, BF968610, AA515829, AC008440.8, AC011531.7, AC002302.1, AC027319.5, AC005484.2, AC005972.1, AC010469.7, AL109743.4, AC005077.5, AL035398.19, AC020916.7, AC022211.5, AC002301.1, AC018808.4, AF001711.1, AC008745.6, AC000052.16, AL035587.5, AC008720.6, AC007421.12, AC003101.1, AC034193.4, AC025593.5, AF045555.1, AC007374.6, AL096814.26, AC005081.3, AL445685.17, AJ400877.1, AC004985.2, AC020558.4, AC009516.19, AC008443.8, AL031447.4, AC006028.3, AL121992.24, AC011465.4, AC008655.6, AC008616.6, AL135928.6, AL513550.9, AL031295.1, AL050335.32, AL049780.4, AC005052.2, AL390060.14, AC011005.7, AP001717.1,</p>

HNTBI26	133	131082 1	1 - 1368	15 - 1382	<p>AB023049.1, AC007000.2, U82668.1, AC005840.2, AC006530.4, AF111168.2, AC018809.4, AC002477.1, AC011443.6, AC018751.30, AC008622.5, AC023038.17, L78833.1, AC007956.5, Z85986.1, AC072052.6, AL137067.7, AC018635.6, AC002059.3, AC004824.3, AC026172.3, AC018506.4, AP000116.1, AL135927.14, AC007227.3, AL445248.7, AL590763.1, AC005914.1, AP001727.1, AL158207.15, AC010320.9, AP000557.2, AL050318.13, AL139809.16, AC008764.7, AC004882.2, AC007731.14, AJ312686.1, AC008969.5, AC004965.2, AC005037.2, AC003353.27, AC027130.5, AC087590.1, AL513008.14, AC005520.2, AC005088.2, AL133244.1, AC008551.5, AL109976.23, AC011461.4, AL132639.4, AC005089.2, AC010492.7, AC009244.24, AC006930.1, AC007318.4, AC005098.2, AC005399.19, AC005529.7, AC004859.2, AL031584.1, AL160471.5, AL391139.19, AF111169.2, AL133448.4, AL451125.7, AP001670.1, AC011890.4, AC005231.2, AF030453.1, AC010527.5, AL034420.16, AC009247.12, AC010328.4, AC073657.5, AC006120.1, AL117692.5, AP000512.1, AL161452.19, AC022382.3, AL445435.11, AC005722.1, AC005632.2, AL162426.20, AL138721.16, AL163636.6, AL049766.14, AL137792.11, AL391827.18, AC004815.2, AL135901.23, AC020983.7, AC021036.5, AL162724.16, AL590762.1, AC011500.7, AC005736.1, AL022312.7, AP003357.2, AL158830.17, AC004089.25, AC006538.1, AP000212.1, AC008760.6, AL450226.1, AL163249.2, AC009002.5, AL121658.2, AF200465.1, AC025438.5, AC091118.2, AC008736.6, AL121601.13, AC004583.1, AC019205.4, AC010326.6, AC007676.19, AC018638.5, AC008755.6, AF001549.1, AC003109.1, AC009194.8, AL021578.4, AF064861.1, AC011247.10, AL354808.24, AP001718.1, AL355480.22, AC005015.2, AL079335.29, AC002299.1, AL035086.12, AC005368.1, AL357515.26, AF168787.1, AC074270.25, Z95152.1, AC002470.17, AP001752.1, AC005070.1, AC005332.1, AC005619.1, AC010458.5, AF196779.1, AC006285.11, AC010422.7, AC010463.6, AC004813.2, AC024561.4, AC007097.4, AC005280.3, AL096701.14, AC002985.1, AC007957.36, AL034379.8, AC004257.1, AL033529.25, AL359092.14, Z93023.1, AP001725.1, AL357560.11, AC022261.8, AL031681.16, AC025166.7, AC007999.12, AC005874.3, AF134471.1, AC016025.12, AC006254.10, AC004148.1, U95742.1, AC026464.6, AC011462.4, AC005821.1, AC003110.1, AC009756.9, AC011442.5, U78027.1, AC007619.22, AC010605.4, AL117344.12, AL121975.9, AL136300.22, AC006337.4, AL157838.24, AL158040.13, AC006970.6, AC007488.15, AC000026.3, AC008687.4, AC018720.5, Z84487.2, AL445222.9, AL132855.4, AC006480.3, AL031286.1, AC004906.3, AF196971.1, Z83843.1, AC003043.1.</p> <p>AL528533, AL520935, AL521290, AL515806, AL520965, BE293492, AL520936, AL515807, AW972854, AV753139, BG178370, BF968317, AL520966, BE780476, BE305183, AI678037, AW293248, AL521291, AI269883, BF978348, AA894746, AI493776, AA778869, AI424848, AA525497, BF307374, AA622403, BG109953, N21347, AI095265, BF792489, AL519236, AA564674, BE249905, AI268502, AA995849, AA894745, AI249680, AW087844, AI300762, N72839, AI244187, AI089147, AI368934, AI740804, AI339842, AW516709, BF315359, AI335796, AW192649, AW801578, N28008, AI095231, BF977145, BF977663, BF765528, BE778762, BE875935, AI951011, BF669511, BG033337, AW393151, AL519237, AW819092, AW393138, BE868896, AV691113, BE875559, AV693124, BF976999, BF690855, AI127890,</p>
---------	-----	-------------	----------	-----------	---

					BE293585, AW984556, BF994881, AW090182, W76593, AA362394, AI906642, BE741647, T57136, AW753803, BF813621, AA533658, BF882501, AI638644, AI370623, AI698391, AA806720, T49776, AW008226, AI568293, AI332957, BE393784, AI590043, AI954721, AW128834, AI364167, AI419826, AW166870, AI884318, AI685005, AI473799, AI699823, AI440239, AI956080, AI393038, AI889189, AI621341, BG119543, AW166583, AW105296, AI580451, AI634345, BE966496, AI619820, AI570807, AW834282, AI499570, AI500113, AI620864, AI684369, AI633125, AW983832, AW103928, BF752997, BF727091, BF761618, AI254731, AW087934, AI802542, BE964556, AI927233, AI538564, AI270706, AW148882, AI915291, AW152182, N21402, AI046466, AA019328, BF811804, AI678446, AI473536, BF669151, AA102339, AW130362, AI653402, AI869765, AI270183, AI613038, BE965129, BG122005, AI950729, AI540821, AI700358, AI266652, AI701097, AW004606, AW198090, AW262552, AI934011, AI282669, AI349482, AI612913, AW084873, AI125015, BE963426, AI695857, AI636588, AI610446, AI572096, AI689157, AW075671, BF812960, BF996654, AI799183, AI687127, AI866419, AI824688, AI866040, AI824576, BE895003, AI683563, AW029489, AI540350, AI499890, BE963355, AI951950, BF724420, BG251076, AI421149, AI567513, AI866469, AI932966, AW129659, AI474146, AI298321, BE275487, AI816306, BE961919, AI539260, AW243451, AI080011, AA878142, AI567769, AV720998, AI524626, AI096481, AI470717, BF814527, AW102794, BE963310, AI478723, AI800341, AW089726, AI912434, AI648509, AI499963, AI673363, AF086351.1, AI117587.1, AI050366.1, BC008591.1, AB056106.1, X78627.1, X99971.1, BC004945.1, BC005825.1, AI080159.1, BC001199.1, BC003573.1, AI080148.1, AI080146.1, AK027095.1, AI136752.1, AC004942.1, AB047627.1, X68560.1, BC004416.1, AI133619.1, BC006181.1, AI133084.1, AF044323.1, BC004373.1, AK027052.1, AK026408.1, AI133653.1, AI133559.1, AF126488.1, BC008063.1, AI136850.1, BC001236.1, BC002373.1, Z82022.1, BC005123.1, AI139099.2, AI162066.1, AK025350.1, AI110280.1, AB056420.1, BC006345.1, AB050431.1, BC002349.1, Y14314.1, AK026210.1, AI137682.1, AC006288.1, AF115392.1, AK026182.1, AI133062.1, AI162729.8, BC008708.1, AK026746.1, AI357195.1, AI050155.1, BC002849.1, AB047878.1, AK000484.1, AI299431.1, L25851.2, AC016706.6, BC004349.1, AI050149.1, AI137478.1.
HNTBL27	134	545534	1 - 777	15 - 791	AW169270, BF475369, AI524823, BE903984, AI530691, BE536833, BG230736, BE881512, BF033804, AA716162, AW183635, AI188277, AI141766, AI624087, AW173452, AI129419, AI683124, BE903838, AI828817, AI308087, BE544869, BF061917, AW291854, BE880241, AW471490, AW615124, AA701470, BF447518, AW025680, BF094269, AW449210, AA315210, BG251005, AW504333, AI239598, BE697836, BE742666, AI284846, AI355748, BE899398, BG027544, BF352604, AW376334, AW376337, AW752527, AW194025, AI890712, AI565340, BC006846.1.
HNTCE26	135	116039 5	1 - 2149	15 - 2163	BG252201, AV726464, AI529709, BE894106, AV726994, BF970560, BF132059, BF977798, AI703275, AW512938, BG164577, AI529708, AI767521, AI823746, BE220262, AA583438, AI143608, AW468337, AI949854, AV727138, AI620344, AI209187, AI630993, BG007081, AI004986, AI565892, AV715169, AI367983, BF056815, AW394003, R70620, BG007658, AA152183, BF381743, AA565300, AA088574, AA931697, AA995899, AI025252, AA297479, T84083, AW138535, H71679, Z45535, AA297478,

						AI865989, AA367654, AA150060, AA04326, AW338484, D29436, R24591, AI005551, H00983, H39751, AI669105, T83438, BF091777, AW138127, R21165, BF083909, BE934286, R76620, AA971307, AA745052, AW945769, AI554153, T84151, BE550213, H01724, AW051517, AW373316, AW373313, T89390, BF083903, BE541509, AA180271, AI263504, AF303588.1, AF140242.1, AL133390.7, AF056032. 1.
HNTN01	136	135228 5	1 - 2073	15 - 2087		AA447485, AA196688, M86015, AI750365, R13985, BF356780, N28763, AC005028. 1.
HODDF13	137	684307	1 - 816	15 - 830		AC011245.8.
HODDN92	138	422913	1 - 1925	15 - 1939		BG116781, BG110501, BE150456, AI742087, AA453725, AI917507, AW769479, AI860142, BE326465, AI459289, AI860141, AW963123, BE646467, AA868553, AW872412, AW971193, AW277065, AI921333, BF576826, AI024689, BE466760, AI354470, AI005467, AW103830, BE045272, AI827987, AA442638, BF109829, AA813604, N28268, AA442648, AA563934, N63406, AA833517, AA663108, AA437299, AA632986, AA436880, N58885, AA812876, AA447794, AA442379, N58892, AW020895, AA522837, AA600372, AA229448, T78981, AA663178, AV693238, AI187977, AV696576, AI472712, AA229164, T85178, AW270324, AV683374, R64648, AA333708, AA703066, AW961515, BE093710, T78927, R64655, BF802058, R95914, T84294, AA551512, AA460220, AI916737, R31132, AA359583, AI217018, N56349, AI91725, BE835233, BE835385, T84796, AV741009, BE835410, AI084517, N83238, AW362842, AA247541, R31089, T91125, AA493776, BE818350, BE818352, AI253986, R31247, AW303285, N95696, BE708493, AA678297, AI003856, BE818343, N95562, AW024721, AA862707, N95587, AA401399, AA399957, AW511080, AL157879.7, AL021368.1, AL009030.15, AL049987.1, AL133255.13, AL390738. 4.
HOFMQ33	139	118446 5	1 - 2396	15 - 2410		AL528504, AU121718, AI820674, T94707, AJ224741.1, Y13341.1, AC079145.3, AJ001047. 1.
HOFOC73	140	931871	1 - 1477	15 - 1491		BF195687, AI762843, BF435173, AW167715, BE675436, AI829951, BF195590, AW517368, AI831464, BF110813, BF939079, AW573230, BE747230, AI760936, BF348602, AA418800, AI870845, AI420441, AI377190, BF196297, N32270, AI813507, AI313119, AI472198, AI340272, AA502942, AI363372, AI806717, AI479956, AA861188, AI073435, AI128897, AI799480, N35138, AA832426, AW753935, AA421515, AW362239, AA258517, AI907351, AA789084, BF924856, H42825, F35882, BF814541, AW409775, AW265004, AA830821, AW089179, AL133741, AA835966, BG029053, BE781369, AI696969, AI565172, AW089006, BE965169, BF527012, AA807088, BE048071, AI567637, AW088899, AI571868, BF725863, BF970263, AI244380, AL119791, BG058039, AW020419, BE964497, AW999906, BE785868, AI400725, AL046463, AI874166, AI922577, AI874151, AW081034, AI620093, AI282903, AI280661, AW193203, AA603709, AI570966, BG260144, BE061389, AI537617, AI919345, BG027628, AW130863, BF915537, AW834355, BF815196, AI648567, BE963918, BF915208, BE072233, AI952302, AI805638, AI366549, AI636719, AI539153, BE964767, AW085786, BE538466, BF904180, BE172499, BE963286, AL036638, AI857760, AA568405, AI611743, AI689420, AW083804, AI696626, AI633477, AV757067, AI589993, AI365256, T99953, BG105895, AL038505, BF814449, AW022682, BE393551.

AA464646, AI963062, BF817746, AI886055, AI472536, AI677797, AW999599, AF009923.1, AL109840.24, AC010102.3, BC008142.1, AF136273.1, AF032906.1, AF136275.1, AL389978.1, BC004874.1, AK024538.1, AK025383.1, AK000137.1, AB063079.1, AL359600.1, BC004265.1, AK026624.1, BC001349.1, AF262032.1, AB063074.1, AF188698.1, BC007355.1, AK000421.1, AF069506.1, BC009253.1, BC008382.1, BC004908.1, AL359620.1, AK027868.1, BC007456.1, J05032.1, AF090886.1, AL137292.1, BC002454.1, AB063008.1, BC001045.1, AL133016.1, AF078844.1, BC004529.1, BC007255.1, BC008488.1, AF125949.1, BC000556.1, BC008893.1, AL080060.1, AL049382.1, BC007534.1, AL389935.1, AB019565.1, BC005007.1, AK025708.1, AL162006.1, U42031.1, AL096751.1, BC007389.1, AL136692.1, AL050277.1, AL512719.1, AF067420.1, BC005678.1, AK024588.1, BC003650.1, AK024601.1, AL122111.1, AB048975.1, AK000647.1, BC003548.1, AL137521.1, U91329.1, AL137665.1, AL117432.1, AF271350.1, AL133104.1, AL110196.1, AK000445.1, AF218014.1, BC006164.1, AK026522.1, AK026626.1, AL133081.1, AK025958.1, AF217987.1, AB048974.1, BC000316.1, AK027164.1, AL117457.1, AB062978.1, AL137300.1, AB056768.1, U77594.1, U39656.1, BC004370.1, AB049848.1, AK000652.1, AL512754.1, AB056427.1, AB060211.1, BC008785.1, BC003682.1, BC008417.1, AK000753.1, BC008282.1, AL133014.1, BC006201.1, BC006412.1, S76508.1, AF081197.1, AF081195.1, BC003687.1, AF239683.1, AF348209.1, AL353625.5, AL117648.1, AL137429.1, AK026533.1, AK026504.1, BC006508.1, AL512761.1, AF305835.1, AB049758.1, AF217991.1, AL122121.1, BC006133.1, BC005835.1, AF091084.1, AF162270.1, AF159141.1, AK026642.1, AB060905.1, AB056421.1, AK024974.1, AK027081.1, M92439.1, AL390167.1, AL080086.1, AL080074.1, BC000550.1, BC002647.1, AB063070.1, AK000432.1, BC003602.1, AB050510.1, BC007391.1, BC008673.1, AK026526.1, AB060852.1, AF303581.1, AF178432.1, AL136586.1, AL389939.1, AJ006417.1, AK026353.1, AB047615.1, AB047897.1, BC008040.1, BC008280.1, AK025573.1, AF219137.1, AL110221.1, BC007998.1, AL442072.1, AL137527.1, AL050393.1, AK000450.1, BC000348.1, AK026591.1, AL136790.1, AC006451.5, AF012536.1, AL049460.1, BC007280.1, AF218031.1, AL133645.1, AK025375.1, AK025541.1, AB063084.1, AK026452.1, U00686.1, AF040751.1, S77771.1, BC008025.1, AL080137.1, AL049465.1, BC000785.1, AK024546.1, AF000145.1, AL137537.1, BC004533.1, AK027116.1, BC003052.1, AK024524.1, BC006210.1, BC005858.1, AK026086.1, AB047887.1, AB060837.1, AK027161.1, AK026647.1, AK026947.1, AB060929.1, BC008485.1, AL122098.1, AL080158.1, AB056809.1, S69510.1, BC004244.1, BC007346.1, AL359618.1, X65873.1, S78214.1, BC006195.1, AK026600.1, BC008455.1, AL080124.1, AL137463.1, S61953.1, BC008780.1, BC007326.1, AL122049.1, AL137526.1, AL136767.1, BC009403.1, AK000391.1, AB048964.1, AK025391.1, AK026528.1, AF245044.1, AK026597.1, AL122050.1, BC008899.1, AK026855.1, BC001967.1, AK026164.1, AF225424.1, AB047941.1, X69819.1, AK026959.1, AL117583.1, AL136844.1, AL133098.1, AK027182.1, AL512746.1, AK026746.1, BC000090.1, AB047801.1, AK025431.1, AL133557.1, AL117649.1.						
BE904978, BE383830, BE890364, BE729647, BE732309, BE789481, BE886173, BE733387, BE386405, BG258301, BE383286, BF125887, BE777790, BE280391, BE515074, AI459129, BE281548, BE664930,	HOQB782	141	135235 6	1 - 3516	15 - 3530	

					AI660728, BE894488, AW749978, AW169336, AW370341, AA719364, AW452738, BG256682, BF439379, AI361918, AW188152, AI690424, AI810025, AA281766, BE890960, AI150426, AI587146, AA630686, AI160979, AI741787, AA634292, AW264224, AA824631, BE207252, AW900280, AI689370, AA233695, BF125572, AA351589, AA769227, AI351341, AW029513, R14719, AI985709, AA634567, AW269038, AA351643, AW674550, R36553, H23984, H22704, AI819095, AA984407, AA355743, AW408651, AA973659, AI538888, T58501, AW661810, AA649086, AI933293, AI673569, BG057154, AI364341, R32827, AA973736, AW273585, AI497846, BF755875, BF927524, AW615711, AA356192, BF963119, BE501436, AA937403, R17171, AA353188, AA922835, AA026761, T99539, R27062, AA280121, H63038, R32930, AI537859, AI796641, BF927128, AI250269, D81030, AA693444, R27063, AV723591, R06448, AW375956, N56014, AA126901, AI276126, AI963082, BG222601, AW964936, BF345885, BF448000, BG002228, AA806733, AW802995, BF346206, AW410405, BF307973, BF755869, T58551, AA905213, BF346212, AI305226.1, AI305227.1, AI136564.1, AI035681. 13.
HOSBY40	142	589431	1 - 1131	15 - 1145	BE465874, BE465890, AW418562, AW814995, AA721114, AC002543. 1.
HOSDI25	143	854234	1 - 2200	15 - 2214	AI521533, BF966564, BG109192, BE621548, BG239805, BF666690, BF667661, BF185318, BF666019, BE621125, AI433432, AW963800, BE883279, BF028488, BF667980, BF196902, BF111775, BF667265, BF664922, BF966437, BF667218, AI277896, BF028500, AI401346, BF696865, BF698781, BG169528, BF696312, AW338135, AI280253, AA873621, AI435513, BE552077, BF699387, BF055949, BF697521, BE542555, AI277959, AA121788, AI961880, AW969937, BF478121, AW338124, AA528626, AW367010, R76478, AA101422, T62844, AI918990, BE167397, W72961, AA876737, R28131, BE176581, AA375127, BF332407, AI365181, W73131, T62693, W21429, N92911, BF570557, AI077290, AA127501, R66340, AI926197, C00153, AA813575, R28517, AI580500, AI222072, AI033269, AA758476, W86851, AV661704, AV725920, AV728997, AV704234, AV726624, AV655280, AV729378, AV708992, AV727787, AV709407, AV654908, AV660608, AV652001, AV656903, AV707541, AV706854, AV702117, AV726738, AV728733, AV708834, AV687035, AV697196, AV708704, AV659322, AV656478, AV698545, AV709314, AV708381, AV660728, AV691080, AV651955, AV703169, AV728518, AW952409, AV709660, AV729220, AV696866, AV726816, AV695545, AV656283, AV708025, AV707933, AV684604, AV708980, AV692691, AV701914, AV705159, AV702516, AV693523, AV726103, AV727029, AV725826, AV725134, AV705280, AV702994, AV683272, AV697288, AV652156, AV728670, AV708723, AV729263, AV707510, AV699089, AV658863, AV701560, AV727776, AV698609, AV696106, AV706744, AV708438, AW951263, AV689111, AV728157, AV708109, AV692345, AV704553, AV683443, AV708893, AV659536, AV706219, AV658275, AV705693, AW960720, AV686064, AV705632, AV706721, AV701067, AV709604, AV704955, AV701707, AV707753, AV706089, AV704269, AV703495, AV702021, AV706677, AW960326, AV709869, AV656256, AV687909, AW954031, AV702832, AV708622, AV729259, AV726784, AV702833, AV707296, AV707767, AW958647, AV654896, AV645906, AV728806, AV652617, AV703599, AV727990, AV701580, AV708004, AV727003, AV703970, AV727526, AV727799, AV728471, AV703472, AV702147, AV686060, AV726156, AV649758,

						AV706342, AV702266, AV729189, AW953965, AV696931, AV698429, AV692972, AV685688, AV689800, AV693005, AV709390, AW953787, AW952414, AV722222, AV645936, AW955653, AV706185, AV684075, AW951618, AV658332, AV703168, AV648263, AV705384, AV707024, AV727807, AW952410, AV707792, AV726259, AW955723, AV706279, AW954439, AV647659, AV725617, AV698583, BC005700.1, AL137163.1, Z83826.12, AF086333.1, AF21994.1, Y08991.1, AC004590.1, AC069275.3, AL117382.28, AC002094.1, AP002852.3, AC009955.4, AC055740.17, AC011470.5, AC004965.2, AF109907.1, AC078846.2, AL109804.41, AC008745.6, AL121653.2, AC018832.4, AC018738.4, AC009502.4, AL136137.15, AC016543.6, AL121579.4, AL161670.4, AL353679.18, AL096701.14, AC025097.41, AC011449.6, AC006345.4, AC007637.9, AC003029.2, AL050341.18, AL353135.32, AC008403.6, AL365499.19, AC008764.7, AC023472.4, AC006449.19, AL513008.14, AC012306.11, AC005632.2, AC005041.2, AJ011930.1, AL163300.2, AL034405.16, AL109865.36, AC074121.16, AC090051.8, AC004962.1, AL096814.26, AC007666.12, AL161911.17, AF053356.1, AL109897.30.
HPFAD79	144	520202	1 - 799	15 - 813		AI056404, AI802391, AW270724, AI750249, N41425, N47678, AI188511, AI376981, AA029314, AW452123, BE466507, N39755, AI937190, AA063620, AA693737, AI139466, AA701241, AI250789, AI672263, AI198257, BF055537, AI199035, AA677064, W69895, AA040154, BF196981, W73711, AA029867, W69841, BF222273, AW900121, AW022270, W69574, AI373227, AI200161, AA701858, AV690112, AW044223, W69662, AI052153, AA872860, H29417, H29324, N26312, AI283749, AA036704, AI383659, AA332627, N47677, AI424682, BE089934, AA329748, AW952484, AI679782, BE796439, AV763892, BE387734, AW303196, AW301350, AW274349, AL046409, AI204304, AU148742, AL048142, F36273, BF475381, BE156019, AL041690, BE872393, N94311, BG236735, AA599480, AW630298, AW473163, AI754955, BF683672, AI281881, AW276827, AI341548, BF806176, AW467362, BF805094, BF940837, AV762050, BE350475, AA631507, AV652936, AW963497, BF965007, AV681599, BE042649, AV762139, AW080939, AW276435, AI291268, AI291124, AW339568, AU154961, AA426277, AI133164, AW088616, AI951863, AW873530, BF816072, AL038785, AW148792, AW338086, BE869857, AW408717, BE042475, AI580652, AA525190, AL044940, AV760466, AV713243, AW969694, AI537955, AC005527.3, AL050318.13, AC010279.4, AC000025.2, AF134726.1, AC008736.6, AC004983.2, AC004965.2, AL162458.10, AC009269.6, AC020552.4, U91321.1, AL136179.15, AC011455.6, AC020916.7, AC084783.2, AC009244.24, AL133332.12, AC009144.5, AC005755.1, AC013449.8, U95740.1, AC010319.7, AP001725.1, AC008068.4, AC011497.6, AL021546.1, AL121586.31, AC004971.3, AL021391.2, AC007055.3, AC011464.5, AC010422.7, AC006430.22, AL390738.4, AL109805.14, AC006483.3, AL033528.19, AP001716.1, AF053356.1, AP000112.1, AL160271.19, AL157882.5, AL022323.7, AC018751.30, AL121900.26, AL356354.10, AL121897.32, AC006435.7, AL160471.5, AC027689.10, AC004878.2, AL121903.13, AL121890.34, AP000044.1, AP000513.1, AC004662.1, AC027319.5, AC011236.8, AC008738.6, AL136980.5, AC020904.6, AL132640.4, AC009516.19, AC018506.4, AJ400877.1, AC003003.1, AC016587.7, AC004847.3, AC012476.8, AP000555.1, AC020931.5, AC018719.4,
HPFBO15	145	131086 8	1 - 1725	15 - 1739		
HPFBI33	146	685699	1 - 1663	15 - 1677		

	147	101146 7	1 - 2634	15 - 2648	<p>AC003029.2, Z93241.11, AC004797.1, AL031281.6, AP001741.1, AC016894.7, AL033529.25, AC068533.7, AC011479.6, AJ003147.1, AL163248.2, AC022148.5, AP001727.1, AL031602.14, AC008403.6, AL139021.6, AC005488.2, AC006329.5, AC079602.15, AC020754.4, AC005736.1, AC004841.2, AL022316.2, AC003684.1, U47924.1, AL031733.3, AL365225.12, AL356915.19, AC008622.5, AC008073.4, AL050349.27, AL353135.32, AC005231.2, AC004707.1, AC022083.6, AL121585.22, AC005015.2, AL137800.12, AC016025.12, AC010616.5, AP001726.1, AC027644.9, AC034198.6, AC005295.1, AC007956.5, AL139321.28, AC006050.1, AC069262.24, AC013434.8, AC004382.1, AC010553.6, AC006581.16, AC004638.1, AE006463.1, AC007739.2, AC007011.1, AL049537.48, AL049760.26, AC006211.1, AF109907.1, Z93015.9, AC011462.4, AC090710.16, AC005844.7, AC006312.8, AC002990.1, AC008474.7, AC011489.6, AC007272.3, AL136418.4, AL139054.1, AL136137.15, AL139352.16, AL109936.10, AC002365.1, AL353579.17, AC005080.2, AL355302.14, AP001710.1, AC009298.3, AC004858.2, AL035404.20, AC005531.1, AC008812.7, AC011491.5, AC024028.10, AC004089.25, AL035659.22, AL354932.26, AC005529.7, AC007226.3, AC006452.4, AB050050.1, AC005837.1, AF111168.2, AL109797.18, AL135838.5, AL355392.7, AL021155.1, AC005512.1, AL009181.1, AC009137.6, AC004491.1, AC018720.5, AL445686.14, Z97054.1, AC007686.5, AC023344.4, AC011005.7, AC007597.3, AC005562.1, AL133367.4, AC010618.7, AP000347.1, AC002369.1, AC004953.1, AC010654.8, AC005081.3, AC008946.6, AC025540.7, AC011495.6, AP001748.1, AL049869.6, AC011461.4, Z86090.10, AC002470.17, AL138724.12, AC009412.6, AC005840.2, AC008760.6, AJ009611.6, AC008985.6, AC011484.4, AC015982.9, AC002133.1, AL049709.18, AC011444.5, Z98200.8, AC010969.11, AL121652.2, AP002851.2, AC008372.6, AL022320.23, AL109965.34, AL096701.14, AL031584.1, AC018809.4, AJ400879.1, AC018808.4, AC008616.6, AL034405.16, AC016643.6, AC005077.5, AC008649.6, AP000045.1, AL355305.9, AP001610.1, AC005225.2, AL161626.20, AC020908.6, AC073542.4, AC023510.16, AC006538.1, AC008764.7, AC012170.6, Z85996.1, AC003070.1, AC005778.1, AC022384.4, AC005037.2, AC020550.4, AL137140.12, AC004859. 2, AP001206.3, AP001329. 3.</p>
HPJBK12	147	101146 7	1 - 2634	15 - 2648	
HPMDK28	148	846357	1 - 1070	15 - 1084	<p>BG112660, BG025264, AL528310, BG168817, BE744551, BE877617, AI356771, BG163540, AA203523, BG031683, BF822950, AW592567, AI176981, AA904437, BF209639, BF312400, AU134583, BF194783, BF058517, BF445932, BF115227, BF732680, BF445936, AW303381, AW149649, AW027536, AW583459, AW475091, AA065227, BF869433, AW103970, AA703536, AA902103, AI735312, AI082224, BE262098, AW405660, AW009422, AA932869, BF940753, AI830877, AI830074, BG222176, AI742006, AI381584, AI133474, AI347025, BF869417, AI452483, AA993536, AW954279, BE737248, N66683, BE261151, AI369439, AI334008, AI005081, AL528309, BE166345, AA365303, BF222033, F32952, AI697441, AA488152, AI418548, BG248769, AI279351, AI888277, BF115544, AI200343, AA977299, AI612818, BE163359, AI830668, BE740423, AW574601, AA315546, BE397815, AA573402, BE004351, AA573411, AA633508, BF925742, AA741489, H82686, BF894571, AA065233, AA360707,</p>

HPRAL78	149	135234 2	1 - 2058	15 - 2072	<p>AV728079, BG230581, N29979, BE561199, N98991, AW439071, AA744699, R73710, AW407745, AA877633, H99709, BF804312, AI381618, BF806994, BF806622, BF806680, BF807000, BF807012, AW407070, BF804328, BF807005, AU155517, AA933001, AA321772, W57549, BF806996, BE271504, H39645, H26855, BF807004, H82425, BF804308, BF975948, AI928746, R81659, R82397, BE791088, R73635, BE939764, AI688429, BE171442, BF378561, BE261882, BF818292, AA469038, AA913203, AA300974, BE171441, AA298641, AW999308, BF206994, BF807016, H26756, BF093709, AW884799, BF737549, AW797205, H11203, AA305598, R81461, BF773046, BF804289, AI738864, BE814697, H49134, H40077, AW889970, AI669504, BE561022, BE394911, AA911419, H40072, BF806979, R82344, AI701370, AI984879, AA064931, AI300423, AA380950, AI301586, BE902194, BE707909, AI983746, AA533457, AW803830, AA737402, AI926327, AI263788, R52293, F26866, AA827751, BF868527, AI168033, AI265814, AI264365, AW085104, AI982777, AW590204, AI381485, AI972009, AA580004, AA463767, AU130766, BE673288, BF109947, AA364441, BE464383, AI693626, AA133473, AW410601, AI685572, BF437257, AI279199, BF437797, BF064139, BE080941, BF059063, BE671687, AA064925, AI051392, BE348682, AI457365, AW341328, AW408516, AA622272, AA642661, Z21606, AA732692, AI261971, AA976709, BF091789, AW002951, BE163143, AI697458, T25507, AA341138, N86893, AI951605, BF058146, BE270120, BC008070.1, AK001809.1, AF27178.1, AK023110. 1.</p> <p>BF342508, BE745079, BF316647, AW954022, BF219864, BF220093, BF182978, BG108443, BE879671, AI684112, BE840525, AW957217, BE840530, AI148569, AI128199, AI041807, BF027688, AA401860, BF915566, BF914452, AA938143, AA588312, AI991034, AI672251, AI862148, AI333529, AI798586, AI095534, BF826436, AA976203, AA424398, AI475525, AI039685, T52017, AI055912, R51437, AW071787, AI598282, AA578538, AA554343, AI140222, AW268634, AI300146, AA340540, AA411182, C04045, AI926947, AW088744, AA757547, AI798454, AW473352, AV691484, AI076726, AV647523, AW475065, AA364829, AW028194, AW249610, W22554, H66782, AA081290, N95459, W25198, R60726, AI311111, AI351724, AW614976, AA506965, AI142999, BF091172, AA604134, T63960, BE840632, AI583100, AI351726, AW009121, AA081115, AA081697, AA411256, BF679941, R60727, AA578520, AW129067, AA612772, AI824391, AA470674, H66783, AW953852, AW006565, N34727, AW160746, AA832062, R36715, R90863, R84524, BF924179, H12158, AW770335, AA315553, AA702770, AW246146, AA370468, AA832305, AW082570, AI568825, BF929006, AA251006, AA043375, AA508725, AW068182, AA766464, BF769780, AW316684, BE260322, BE819573, AA082047, AA370467, BF929011, BG056952, AW241232, BF751574, AI686507, AL050275.1, BC008720.1, AC022007.3, AC018809. 4.</p> <p>AU147250, F24079, AI791459, AI732503, AA523577, AI791342, AU121439, BF309840, BF308519, AI659402, AA719317, AA602233, AI752815, AW967109, AV694013, AA470486, AI218622, AA644545, AK022184.1, AC005777.1, AI031431.8, AC007406.1, AC032011.14, AC004143.1, AC006131.1, AC074121.16, AC005760.1, AC005529.7, AL354766.17, AC025166.7, AC012476.8, AC005544.1, AL035079.14, AL356299.16, AL031297.4, AC005778.1, AC011666. 28.</p>
HRABA80	150	882176	1 - 1237	15 - 1251	
HRACD15	151	871221	1 - 1525	15 - 1539	<p>AL519765, AL519766, BE910445, BF684654, BE270497, BE513843, BF975936, BE396890, BF973472,</p>

				BE515166, BF686665, BE744708, BG257119, BE880162, BE797305, AW248552, BE514176, BE793786, BE791776, BE296702, BE271500, BE268991, AW512838, BE791090, BE727326, BF026627, BE797018, BE275277, BE277906, AU133849, AW248687, AU120611, BE270509, BF027092, BE384166, AI565668, BE513807, AW405789, AU151587, AA261853, AW043669, BE729554, AI949119, AW575486, AW751019, AI524253, BE391940, AW245114, AU145208, BE312276, BE796133, BE561087, AI953094, BE390017, AA283855, BE265439, BE391036, BE391843, AI620547, AW402545, AI075157, AI744741, BF125945, BF941740, W60104, BE266246, AW085553, AW131075, AI768378, AA401964, BE390215, AI752668, BE736619, AW967867, AI565659, BE387591, BE222775, AA283856, AW750999, AA261854, AI498229, AA830894, W60024, AA496293, AI660481, BE960924, BE277521, AA994223, AA868400, BF026241, BE382766, AI801124, BE671092, AI264882, AI355420, AW248994, BE503489, AI262893, AA583344, BE266582, AI832018, N29665, AA622755, AI439625, AI93362, BF446254, BE504260, BE387503, AW806699, AU146635, BE856089, AI087826, BF801189, AA133817, AA843858, AI287716, AA928793, AA699788, AI027345, BE728607, AW629986, W52804, T10369, AW103963, AA933691, BE138812, AI284845, AW264928, AW152071, AI265798, AI809041, AI038469, AW246086, AI435409, AV691151, AW957437, AI620834, AI452870, AI860541, AI475835, AI418409, AI744163, AW002187, AV692842, AI521647, AA845397, AI744800, AW002140, AI309558, AU118709, W96176, AW768771, BE207457, AW236670, AW264115, D29066, AA026580, AA135589, H55790, AW732194, BG006063, AI024919, AA256768, AI214884, AA280734, AA565467, R87509, BF056311, AA643222, AI024305, BF204467, AA077296, BF310268, W07856, T30234, R48997, AI435115, AI567828, AI537884, AW050631, AI740587, BE162565, BE149783, AW090152, T10368, AW627586, AI537596, AA622914, T50404, AW016161, W45022, AI274609, AA570075, AL039562, AA827726, AW246353, W04715, H89133, BF125722, AA626654, AW246566, AW519242, AI659744, AI752669, AW247535, AA077415, AW129363, AI202252, AA628809, BE869982, AI208476, BE206952, AW511835, AA037397, BF828156, BG031018, BE513491, BE736901, AW149144, AI189756, AA078651, BE513973, BF194732, H47888, AW954928, AA806404, AW080710, BF847605, AA077110, AA319080, AA101354, AI214676, AA434187, AA932091, BF837875, BE140453, AA428843, R11194, AA778244, AA077601, AW082443, N90686, AI675644, BF794477, W05073, AI520907, AL046053, AW298462, AA496322, T50535, BC008084.1, AK001129.1, AK021688.1, BC007488.1, AL117583.1, AC006014.2, AB014518.1, AC005488.2, Y16704.1, N54250, N81046, AA036807, AA135546, AA236044, AA262692, AA938381, AA204918, AA402082, AA455506, AA455507, AI217271.
				BE906771, BE218907, AI912661, BE670671, BG166321, AW167740, AI698131, AI796048, BF476110, AW952474, AW474992, AW149683, AI814137, BF436724, AA452391, AI635719, AI422285, AI675301, AW301634, AI800309, AI269915, AA054467, BF062213, AI220479, AA991181, AI159765, W88683, AI623293, AI205308, AA043330, AA461136, BE669608, AI032982, AA634903, AI361429, AA877688, BF681677, AW868366, AI683625, AI094869, AI268543, AI040482, AA460833, AI042583, AI800329, H40189, AA041196, AI420048, AA127006, AI023081, AA045134, T96696, M79132, W23483, BF000996, AI161385, BF476853, AI521085, AI984382, AA492294, AA016124, N95081, R13864.
HRACI35	152	877666	1 - 2063	15 - 2077

					<p>AI146307, W28330, AI022619, T19296, AA410735, BF573582, BF056915, T30952, AI971069, AA043329, AA126627, AA215786, R07660, BE833878, BE833866, AA329616, BE833882, BE833868, AA977851, Z41866, AA226105, AA126801, AA056673, AV693019, AA216384, R18560, AA041433, AW244035, R05716, AA868767, BF222351, H40140, AW589719, AV686312, BF207973, AA226035, AA228673, AI817777, AI420271, AV747189, AI248289, R05717, T30818, BF847400, Z38161, AA879250, D57208, R37006, AA319785, AI699205, T96591, AW945698, AA225132, AA333327, AA045610, D57177, AA226695, AA045355, BE905736, BE670421, AW469919, BF000980, AW771589, BF871391, F19153, AW152062, AW964837, R41427, BE242459, BF445505, AW373047, AW069103, W88670, AA761464, BF844537, AF107834.1, AF119386.1, AP003117.2, AF107833.1, AP003111.1, AP003112.1, AP003477. 2.</p>
HRGBL78	153	910133	1 - 2094	15 - 2108	<p>BE271199, AW575245, BF794609, BF797900, BE559773, BE384088, BE513826, BE270971, BF572042, BE560978, BF690655, BE674800, BE275832, BF303959, AW205367, AW402801, BF203242, AW402242, AW402928, BF305905, BE466652, BE892536, AW403946, N24246, AW968460, AI654541, N28316, BF572179, N29315, N38941, AW383418, AA558944, AI276242, BE729612, AA215300, N33010, AW383426, AW383396, N20230, BF692515, AI439520, N29316, AA459158, N25452, W03476, AW383428, AW402824, N30453, N28949, N21241, AI760983, N20533, AI434284, BG025865, N72999, N20563, BF896859, AW403434, N67502, AI470743, N73074, AA837208, AW407871, H84381, AW404443, N26470, W02963, AI864746, N46511, W02298, H98912, H84382, N35519, H99497, BF890914, AA761778, N71796, AI222330, BC006521.1, AL359541. 11.</p>
HROAI39	154	118169 9	1 - 1132	15 - 1146	<p>T66247, BE081925, R34513, F12057, AA852760, AA125904, BF996914, BF107281, BF743278, BF742834, AB040901. 1.</p>
HROBD68	155	827306	1 - 1984	15 - 1998	<p>AI921101, AW102963, CI7730, AW139132, AI499286, AU157470, AW157413, AW517766, AI285660, AI038713, AU146974, AA779937, AW272376, AI862212, AI246569, W58428, AU145383, AI051341, AI925647, AI869945, N77920, AI591332, AI440018, AU148220, AI872191, AV695638, T06365, AI310239, AI559442, AI818151, AA811111, AI453790, AA130476, F16040, AI685116, AI610326, BE646447, AA166854, AI540098, AI375417, AI887321, AA767353, AV693309, N20521, AI369914, AA846188, H96719, AA961590, AI088245, AA902828, BF112065, AA129986, AI439415, N30146, AI817158, N33132, N31608, AW084901, AA055654, BE245707, AI619818, AI628308, N20064, AV726924, AA347740, AA932087, AA657353, AA550798, AI028382, AW262471, AI147839, AA132716, AA460715, AI250812, H97388, BG027070, AW072619, BF002501, AI568919, Z36956, AI538654, N90055, AI376849, AI952804, AI264673, AA468571, AA584498, H04879, AA342051, AI733728, BF963854, AW962610, AA099788, AI858607, AI189033, AA157033, AI675848, AA722562, AA659014, AW468555, AA862135, AA911409, AA226507, AI244642, N24958, AW085676, AA169142, AA364962, AA569918, BF221900, AU156129, AV702748, AA016272, AI601265, AW272291, AI082077, AI376984, AI377100, AA864823, W16525, N26697, AL110383, AW088343, BE264670, T48029, T69889, AA724610, W96522, AA826143, AW753399, AI827133, AI783731, AI598077, AA565911, AL523955, BE677100, BF772474, AV695478, BF576607, AU143935, AL521095, H20876, W31567, BF805088,</p>

R70883, AA136630, H01156, AI521525, AA503213, H68343, BG152386, AI890971, AC009623.6, AC008173.2, AC084881.19, AL161901.18, AC020892.7, AC020603.4, AC024341.9, AJ271735.1, AC002486.1, AC013719.8, AL109847.5, AL138965.10, AL137011.9, AL356962.8, Z99758.7, AC005798.10, AL163202.2, AC073200.6, AC004894.1, AL451083.5, AC004087.1, AC025040.7, AC015987.5, AL163152.4, AL353772.14, AL590043.7, AC002527.1, AC009483.3, AB045357.1, AC005885.1, AL360089.13, AC067941.7, AL163203.2, AL162500.15, AP002532.1, AL355581.14, AC006334.3, AL445383.5, AB000882.1, AC021017.4, AP003493.1, AC073964.3, AL139109.14, AC010252.3, AC009802.13, AC023842.5, AP002797.3, AC008109.6, AL050309.4, AL353650.5, AL442183.4, AC006043.1, AC010719.4, AF224669.1, AC012558.8, AL022153.1, AL121578.1, AC010747.10, AC003091.1, AP001691.1, AL049732.11, AL583822.6, AC073137.7, AC003051.1, AC009120.8, AC007102.4, AL512427.10, AC018616.5, AP000949.2, AC018468.4, AL355888.3, AL050329.12, AL035466.3, AL139110.17, AC003083.1, AC087431.2, AL159152.11, AC007773.1, AC008427.7, AL138703.10, AC079631.16, AL133370.4, AL109753.9, AL512310.3, AC019041.8, AL160413.7, Z82205.1, AC016831.1, AP001692.1, AF017104.1, AL157915.3, AL355365.10, AC000112.1, AC003012.1, AL392087.7, AP000077.1, AC025226.4, AP001683.1, AC006249.1, AC007000.2, AC004605.1, AL158158.14, AC005668.1, AC022467.7, AC006239.5, Z98304.1, AL359085.14, AP000506.1, AC007262.4, AC034245.4, AL450305.7, AL356005.9, AL163248.2, AC090527.3, AF001549.1, AC008014.5, AP001922.4, AC005213.1, AC025471.5, AC006287.1, AL121595.5, AC012491.7, AF241726.1, AC069543.4, AC022363.24, AF196972.1, AC005562.1, AC022745.5, AP002436.3, AC002456.1, AC021070.24, AC008774.5, AC019100.4, AC004993.1, AC004848.1, AC002541.1, AL513011.7, AL163227.2, AL354831.18, AC008444.4, AC026167.4, AC013410.5, AC005146.1, AL035552.9, Z83850.1, AL139090.11, AP001700.1, AL356269.10, AL136307.12, AL390731.9, Z83822.1, AC024900.20, AC034240.4, AL354937.12, AC005939.1, Z98754.1, AL512449.6, AC005378.2, AC021015.4, AC006961.16, AC025920.12, AL163247.2, AC078957.16, AC007533.2, AP000402.2, AF130343.1, AL009172.1, AC008583.5, AC006370.2, AC004066.1, AC009892.5, AC018645.4, AC005988.1, AL132985.4, AC005188.1, AL356276.9, AC020644.6, AP000742.4, AP001686.1, AL133353.6, AL049767.12, AL121868.11, AC015541.21, AC005358.1, Z74696.1, AL163280.2, AC000115.1, AL589693.3, AC002458.1, AC025887.4, AC005406.2, AL358112.20, AC026162.5, AL135978.4, AL391221.15, AE000661.1, AC022404.7, AL031643.1, AC005951.1, AC068139.5, AL138758.7, AC006213.1, AC007163.3, AC011247.10, AL512641.9, Z99571.1, AC009319.19, AL022308.1, AL049831.2, AL158193.13, U82670.2, AC061958.11, AL158038.10, AC004740.1, AC084373.24, AL355612.8, AL359197.20, AC015502.6, AP001681.1, AL136419.2, AC025265.21, AL137145.13, AC021382.6, AC010140.3, AP001674.1, AC006994.4, AC005593.1, AC006840.17, AC019072.7, AC009961.11, AC026743.4, AC006016.2, AC068726.5, AL359502.14, Z82216.1, AL035427.17, AC078961.23, AL137226.3, AC024084.4, AL157698.8, AC021079.4, AF241725.1, AC005901.1, AC010376.5, AC011288.4, AC068812.13, AC022267.8, AL132800.4, AC021850.8, AF235093.1.				
---	--	--	--	--

HSAWD74	156	460527	1 - 956	15 - 970	<p>BG056446, N32720, AW152171, AA339555, AA076697, AA525291, AA380007, BE734992, AA077031, AA379882, BE047929, AA515728, AL282253, AA683069, AW275432, AW274078, AA533025, AI675615, AL040054, AA644090, AL345123, N42169, AW023111, AV756491, AL962030, AV758870, AW021774, AA602906, BG222564, BG222326, AV762454, AL048060, AA225406, AI879951, AA078830, AW514006, BE063437, BF725844, AL591299, AL590522, H68343, AA825827, AA559166, AW272294, BF213224, BE049095, AL344810, AA714011, AW502237, H63660, H24331, AA171400, AL449689, AI753113, F18888, AA282951, AV761486, AW193493, AA669238, AI557644, AI049868, AW631267, AA525331, AW117740, AA507623, AA82183, BE968744, BE677164, AW571963, AI433952, BF991881, AA701080, BF970107, BF212465, AA832175, AA470933, AW157128, AL343144, AW974751, AW338376, AW410409, AW844636, AW664505, AA827383, AV760014, AI745116, AI003611, AV683406, AW021154, AW501278, BE968477, BF991882, AI189682, AU124213, AI336637, AW572140, AA610644, AW963463, AA708322, AA489390, AI887235, AC004084.1, AC004951.5, AP000252.1, AP001711.1, AC006160.9, AP000031.1, AC022383.3, AC009131.6, AL354864.16, AL121900.26, AP000212.1, AP000134.1, AL031281.6, Z99716.4, AC009144.5, AC005015.2, AL137852.15, AP001207.3, AL035458.35, AP001753.1, AC026794.4, AL139022.4, AC009179.17, AL033383.26, AC090498.2, AC011472.7, AL162578.13, AL590762.1, AL117380.28, AF045555.1, AE006467.1, AC006088.1, AL096701.14, AL137881.12, AC011491.5, AC018828.3, AC005081.3, AC034193.4, AL110115.38, AB001523.1, AL023386.1, AL022237.1, AP000348.1, U91322.1, AL049591.12, AL133367.4, AC018808.4, AC091529.1, AC005666.1, AC011497.6, AL450339.5, AC004655.1, AP001718.1, AC005052.2, AC026866.8, AL136228.8, AC005793.1, AL139317.5, AL354720.14, AC004129.1, AL035461.11, AL161727.15, AF217413.1, AC007371.16, AL049539.21, AL008729.1, AC000353.27, AC003962.1, AC005940.3, AL158830.17, AF001549.1, AC004263.1, AC006441.13, AP000345.1, AC011811.42, AE006640.1, AL035086.12, AC004777.1, AC055120.5, AC002430.1, X02571.1, AC009477.4, AC006285.11, AC006597.2, AC018663.3, AC011479.6, AL139193.4, AC005692.1, AC009220.10, AC005907.1, AC007384.3, AC005049.2, AC004913.2, AC010328.4, AC005701.1, AC016025.12, U59962.1, AP003357.2, AC006345.4, AC006241.1, AL356805.5, AC004089.25, AC009247.12, AC005520.2, AC004910.1, AC027319.5, AC011495.6, AC008126.9, AC008521.5, AC005231.2, AC006449.19, AC002554.1, AL138720.19, AC011485.6, AL138875.8, AC008747.5, AC002994.2, AC003029.2, AC005291.1, AC006430.22, AL121712.27, AC078962.30, AL359082.16, AC004647.1, AC002429.1, AL277546.2, AL133351.33, AL355102.5, AL391827.18, AL137140.12, AC004812.1, AC005098.2, AL390878.6, AL512883.5, AC090958.1, AC004883.2, AL135924.11, M12901.1, AL109984.14, AC018758.2, AL133477.16, AC012170.6, AC026185.3, AC005736.1, AC090426.1, AF283320.1, AC012499.7, AC011446.6, AC005288.1, AC005355.1, AC006581.16, AL162430.15, AL133500.3, AL109865.36, AC010271.6, AL445195.4, AC005005.1, AC003043.1, AL354815.10, AC083884.6, AC008755.6, AL021579.1, AL354935.23, Z81364.1, AL109925.11, AL139339.22, AC004876.2, AC020983.7, AF195658.1, AL022727.1, AC005598.6, Z93930.10, AC011480.3, AF312915.1, AC005220.1, AC074121.16, AL139123.14,</p>
---------	-----	--------	---------	----------	--

					AC010679.6, AC027124.4, AL157838.24, AC010205.5, AL049547.10, AJ300188.1, AL357972.18, AC002350.1, AL356095.11, AL162505.20, AL118502.38, AL022231.1, AC021016.4, AC008753.8, AC011890.4, AC005409.1, AC005516.1, Z97987.1, AC010458.5, AF053356.1, AC006111.3, AC007537.3, AC002133.1, AL390026.1, AC002319.1, AL137142.20, AP000555.1, AC005180.2, AL135838.5, AC024028.10, AL034429.1, AC007055.3, AC007298.17, AB006639.1, AL078633.32, AC066597.4, AC007766.1, AC010605.4, AC025280.4, AC005363.1, Z68870.1, AL162503.12, AP000501.1, AL355101.2, AC006208.3, AC010422.7, AC008752.6, AP000901.5, AC008569.6, AP000346.1, AL031121.5, AC005038.5, L78810.1, AC005839.1, AC005037.2, AL391374.9, Z83840.7, AC005911.6, AC004840.3, AL034402.9, AC005228.1, AL035464.20, AL355336.15, AL121920.21, AC025166.7, AC011465.4, AC005695.1, AL133448.4, AC007003. 4.
HSDEK49	157	135225 3	1 - 1768	15 - 1782	AL513706, AL513705, AV700980, BF343961, AV710516, AV716397, AV715849, BF351156, AV717025, AW071975, A1922669, A1129815, BF106386, AA702864, W32947, AV690218, AV685715, AV693576, AV686846, AV695322, AV697709, BF924861, A1168499, A1343825, AA627735, A1554367, A1335089, AV697729, A1290781, AA875852, AA442570, AV686969, AV698914, AA486920, A1357884, A1088635, W79882, R39812, AV683817, BF932594, W17367, N78991, AA972857, R62969, R59135, AW961380, R56601, BE857524, R66262, W74268, AA436814, AA813538, H05057, AA133776, Z43556, R14044, R81029, T48889, AA228697, R56602, AA142932, R63023, Z39624, F02373, AA993978, R66723, R67603, R59136, R80928, AA133775, AW874480, T48888, AA228698, AA368546, BF525711, AA115592, AA328299, AA486747, BG001652, A1132502.1, A1034397. 1.
HSDFI26	158	834619	1 - 1191	15 - 1205	A1770009, BE467511, AW593206, AA434584, A1767843, AA780308, AA563708, AA317400, AA433906, AB021123.1, AC005598.6, AF361936. 1.
HSDSB09	159	130149 8	1 - 795	15 - 809	BF432333, A1861851, A1240993, A1795956, A1074484, A1640759, AW006868, AW241621, BF592070, AW271387, AW614840, AW450466, AW243423, A1244694, A1640517, BF431431, BF431530, A1439169, A1613108, A1915938, A1984796, A1245393, AW300335, AA931466, AW235983, AC005722. 1.
HSDSE75	160	545057	1 - 1137	15 - 1151	AW378251, BF349814, AA687791, BF739001, AW378183, AA661723, H61383, T88677, H62404, AA443169, AW339864, AA458622, AA252063, A1129690, AW960791, AB006755.1, AB006756.1, AB006757. 1.
HSIDJ81	161	589447	1 - 1289	15 - 1303	H27567, H27494, H71543, A1754653, BF857849, AW023111, A1521525, AW572721, AW963450, A1254770, A1926102, AV701462, AW020150, A1871973, AW500534, AW275432, AA218851, AA595661, BF854170, BF853574, BF853009, AW151247, AA536040, AW274078, AW958962, A1791659, AA669238, A1223626, A1249853, AW302048, BF725844, A1284543, BE139139, AW855625, AL042621, AW575000, A1801505, N68677, A1250552, AV758870, AW272294, H86725, AW851405, A1625604, A1251034, AA525807, AW075979, A1697235, A1090377, AA570255, AA702637, AV760014, A1729387, AA831426, A1697239, A1879951, AW504224, A1879951, AW502949, H77492, AW514055, A1224583, AV759203, BF527070, AA491767, AA229496, AL158830.17, AC005412.6, AL355855.23, AL132718.5, AL391868.15, AF285442.1, U91321.1, AP000505.1, AF129756.1, Y14768.1, AB000882.1, AL353804.22, AC005013.1, AC004448.2, AL139415.10, AC009309.4, AC091529.1, AL391122.9,

HSKDA27	162	135240	1 - 4398	15 - 4412	<p>AC009996.7, AL354836.13, AC010530.7, AC005274.1, AC007242.3, Z98048.1, AL354861.11, AC006121.1, AC007685.2, AC020552.4, AC008126.9, AC090509.1, AL096701.14, AC090951.1, AC066597.4, AC068319.4, AC006581.16, AC005332.1, AL117334.29, AC005200.1, AC024163.2, AC005632.2, AL031447.4, AL163279.2, AL355074.5, AL121586.31, AL021546.1, AL295844.1, AC005484.2, AC013717.8, AL445196.7, AC007255.4, AC008760.6, AL136219.17, AL160274.9, AL031277.1, AL390037.16, AL031658.11, AC012170.6, AC005102.1, AC026464.6, AF228703.1, AC008068.4, AC005921.3, AL121808.4, AC004699.1, AC009412.6, AL031311.1, AC007216.2, AB053170.1, AL109965.34, AC009488.5, AF312915.1, AL132713.11, AL133173.19, AC087225.1, AC022516.4, AC009314.4, AC007376.9, AL034420.16, AC007850.29, AC005280.3, AL449305.4, AC020913.6, AC010326.6, AL391259.15, AL512885.4, AC004824.3, AC024168.4, AC009137.6, AL023575.1, AC010271.6, AC011446.6, AC004000.1, AC090005.1, AL121594.6, AL031726.22, AC005180.2, AL136305.14, AC006251.3, AL139316.5, AC007262.4, AL109963.4, AC012085.4, AP000503.1, AC005995.3, AC007041.3, AL121903.13, AL139039.17, AL121973.2, AL022326.1, AC073101.7, AL359986.15, AC006449.19, AL356257.14, AC019206.4, AL358237.13, AL138720.19, AC006457.3, AL162458.10, AL034380.26, AP002436.3, AL445143.2, AC010223.5, AL157952.8, AC007707.13, AL031293.1, AC008641.6, AL357315.14, AC003080.1, AL138688.27, AL138752.5, Z95115.1, AL158207.15, AC004840.3, Y10196.1, AC005859.1, AE006465.1, AL356115.9, AC018492.6, AC006455.2, AC018764.6, AL117348.25, AL049835.3, AL118520.26, AC004491.1, AC005480.3, AC090518.2, AC010618.7, AC005940.3, AF111168.2, AP000213.1, AC018636.4, AL356299.16, AC091493.1, AL136179.15, AC005257.1, AL096791.12, AL139113.21, AP000135.1, AL357518.15, AL021808.1, AL133453.3, Z93017.6, AL365444.11, AL390838.26, AL445669.9, AC008812.7, AL513008.14, AC007537.3, AC004447.1, AC003029.2, AC026776.4, Z97054.1, AC005399.19, AC010412.7, AL133466.22, AL136164.8, AC005527.3, AP000031.1, AC010616.5, AC074295.7, AC090532.1, AC004846.2, AC018808.4, AP001724.1, AC005529.7, AC004551.1, AL353777.18, AC004686.1, AC008044.4, AC018663.3, AC004873.3, AP001412.2, AL022316.2, AF064858.2, AC008279.3, Z94801.1, AC010363.6, AL162390.9, AC005070.1, AL078596.8, AL590762.1, AC079177.21, AC003101.1, AC004644.1, AC006101.3, AC005516.1, AL353798.9, AC002037.1, AL049576.19, AC008784.6, AC011455.6, AL162584.9, U82828.1, AF134726.1, AC009319.19, AC007541.9, AL136295.3, AC013449.8, AL132780.5, AL109952.15, AC005081.3, AC007991.7, AF168787.1, AL136304.10, AC004789.1, AL354808.24, AC027130.5, AP000152.1, AL138958.18, AC020633.3, AC004813.2, AC018500.3, AC006077.1, AL109956.19, AL139317.5, AC004851.2, AF243527.1.</p> <p>BF338364, BG253437, BG122685, BF037455, AW303375, AW173315, BF037378, BG120262, BG117983, BF915045, BF057308, BG252401, BG034853, BF793365, AW379378, BF826037, AA570507, BF915582, BG122734, W07328, AA600736, AI971935, BE697573, BE313814, AI090486, AI751258, BE839359, BF447303, AW631492, AA625303, BF513067, AI609700, AI768270, AI751257, BE939504, AA417652, AI751036, BE378218, AI652263, AI971415, AA599207, AI371013, AA024968, AI147536.</p>
---------	-----	--------	----------	-----------	--

HSKGN81	163	676075	1 - 1893	15 - 1907	<p>W55850, AA063585, AW794702, AA446024, BE889110, AI828437, AI862133, AA421744, AI272646, AI148235, AA419609, AW005418, AA634323, BF883408, BF378271, AA416767, AA258414, AW305114, AI083516, AI752526, AW024492, AI698032, AW957682, AI092202, AI191710, C05155, AA419525, AI218226, AI754332, AW794499, AA410929, AI936116, AI079893, BE272411, AA593295, AA455497, AI039656, BG035195, AA747741, AI774270, AA364833, AI350380, BF940413, TS9268, BF197746, AI084698, AW800540, AA834031, AI673545, AW795817, AA978105, AA622501, AA032249, AA912802, AI432010, N66832, AI751035, AI754989, AI082183, BE178218, AI751086, N75819, N67061, AA971661, AA873147, AA478719, AA036654, TS9227, AI538117, AA662437, BE765721, T66232, AI751085, AW674273, AA024662, BF197986, AI564218, AA319726, AA657729, N64555, AA852211, C03119, AI221431, AA455496, AA033678, C04206, AI520867, AA258397, AW867914, AW867908, AA382381, N24008, AA456579, AA936765, AI433202, AA446297, AW338252, BF940540, AI075349, D31528, BE839377, AI537292, AA382234, AI446798, BE839418, AA459088, BF724219, BE839363, BE773013, AI064722, AW375493, AW375513, AW375482, AW375483, AW375502, AW370152, AW134700, BF352435, AW375514, F12285, BE772982, AW797394, BE839409, BE710069, AA299257, AI061637, BE773049, AW375497, H63649, AW805832, H29954, AI587210, AW836298, BE773047, H75893, BF985423, BF089372, AA610296, T73259, D30912, BE839372, BE934501, AW937287, AI531501, AI270416, AW376140, AW838930, AI886158, AA375571, AI134647, H94943, BG006581, AW964941, AA336003, AA410897, R94988, W47433, R64321, D31541, W39467, AV693669, T82080, W04350, AA384793, AW572523, BE693478, AW375499, BF569459, AA428478, BF001215, H43934, AA382233, Z20767, AA382380, BE157468, W16893, BE066790, AW384231, BE157596, H80974, R96403, BE814079, AA345211, BG153436, AV654605, BE157507, AW292030, H62182, AW384236, AI382511, BF674009, AA335755, H25902, W65400, BG169442, AV710284, T64640, AA994712, BF944442, BF725435, BF726055, BF917617, W67868, H71581, AA326037, M14036.1, X07577.1, M13690.1, M13656.1, M13203.1, X54486.1, X07432.1, AB062098.1, X07431.1, AB062097.1, AB062096. 1.</p> <p>BG110811, BE745101, BE743722, BE545826, BE745120, BF681303, AW978606, AV702796, BE047756, BF848815, AW961578, AA446896, AI422823, BF848816, AI911304, AI038608, AA312710, AI143843, AI150244, BF829479, AI193547, AA705005, AI268239, AI140112, T65948, BE547522, AA393113, AI366477, AI085862, AI074853, AI277116, AI983894, AA394060, AA643650, AA100891, BF819277, AA922511, AV762171, AA478086, AI689302, AI275103, AI359079, AA532473, AV729423, BE349933, AI287604, AA477628, AV704180, BF847512, AI921910, AW105712, AW370596, AI624549, AW149890, AA505962, AA321215, AI357856, AA292337, BE292730, T34097, AW439882, AA447016, AI914726, R42595, AI858704, AI446219, AI275944, Z43230, BE707350, AW194214, AA135290, AW378090, BE241555, BE243232, AA010669, AW953547, AA632244, AW662488, BG057144, AW068278, R12726, BE151809, AW674205, T74373, N78860, BE242323, T31535, AI689506, R27706, F09665, R17501, AA435604, AW572245, BE548954, AI023355, BE545268, Z41318, AA383547, AA454729, AA570630, AA031630, AW173762, AW840945, AA381001, AA234325, T35951, Z45645, BE242712, T35949,</p>
---------	-----	--------	----------	-----------	--

HSNAD72	164	467397	I - 847	15 - 861	<p> AI866536, AA381111, AA693741, D82426, U83555, BE243322, F12018, AW793087, D82527, T64523, AW130852, AW262657, AA090647, AA359844, T19865, AA082483, U52870, R39778, W17267, AW603488, AA858156, AW068025, AW801618, BE242609, R05679, BE672790. AW971203, AW861646, AI610321, AI880774, AA829195, AI880765, AA551170, AI969833, AA133550, T61620, AV758870, AA557945, AW873417, AI635819, C06160, AV761107, BE268727, AA743968, AA845333, BF574331, BG222875, BF946125, BF882222, BE068993, BF946124, AA493841, AW169469, AI251576, AI821901, BE044000, AI701898, H86399, H47461, AI338426, AI926093, AC009086.5, AC003007.1, AF001549.1, AC004638.1, AC018868.4, AC008747.5, AC090527.3, AL050318.13, AC078846.2, AC006254.10, AL035462.21, AL355476.12, AC026431.3, AC087091.1, AC005245.1, AL031311.1, AL136981.22, AL391241.21, AC010422.7, AC010267.6, AC011609.9, AC006538.1, AC006483.3, AL353807.18, AL049776.3, Z98200.8, AC067722.21, AC010913.9, AC008622.5, AC018828.3, AL080317.11, AC005484.2, AC022383.3, Z97989.1, AL117258.4, AC004531.1, AL121594.6, AL161656.20, AL122020.5, AL157372.18, AC067742.5, AL021453.1, AL390074.17, U47924.1, AC005077.5, AC002404.1, AC008482.5, AL035404.20, AL136124.10, AC005519.3, AL359983.7, AC005932.1, Z74739.1, AL034402.9, AC004813.2, AL136304.10, AC007386.3, AC022392.4, AL136979.16, AL031660.16, Z83844.5, AF000279.1, AC004975.2, AC011462.4, AL139809.16, AL450226.1, AC007193.1, AC008812.7, AC025588.1, AL445212.9, AL121890.34, AC011497.6, AC008752.6, AF000688.1, AC007216.2, AL356915.19, AP000106.1, AF207550.1, AC016742.10, AC005620.1, AC022384.4, U95742.1, AC004000.1, AL117381.32, AC011479.6, AC007285.3, AC008484.5, AC005755.1, AL157838.24, AC023790.21, AL162724.16, AC011487.5, AC000353.27, AL137077.31, AL031733.3, AL445490.6, AC025165.27, AC018711.4, AL354707.17, AC006251.3, AP000038.1, AL590763.1, AF129756.1, AP002852.3, AC005602.1, AC010170.3, AC005041.2, AL050302.2, AC005821.1, AC004846.2, AC003041.1, AL133238.3, AL031575.1, AC005257.1, AL137918.4, AC007163.3, AP000555.1, AL135905.6, AC020915.6, AP000047.1, AC025280.4, AL117330.6, AL135927.14, AC007227.3, AL049868.20, AL133367.4, AC007686.5, AC005365.1, AC006511.5, AL163203.2, AC020928.6, AC007298.17, AC009756.9, AC005666.1, AL359091.10, AC006515.7, AL139353.3, AL136170.12, AC009238.4, AL353804.22, U91323.1, AL160236.4, AL450224.1, AL159997.14, AP001724.1, AC006452.4, AL158830.17, AC004812.1, AC007751.3, AC004675.1, AL080243.21, AJ246003.1, AL354932.26, AC009488.5, AL391987.15, AP000213.1, AL354935.23, AL158813.16, AP000744.4, AC002543.1, AC010271.6, AL138878.10, AP000558.1, AC009144.5, AL020997.1, AC004913.2, AC008392.6, AL133246.2, AL161436.12, AC073073.2, AC012306.11, AC020914.7, AC090942.1, U52112.1, AL110115.38, AC004491.1, Z96074.4, AP000135.1, AC005410.2, AJ009616.3, AF165926.2, AL121886.22, AL109628.5, AL109743.4, AC008760.6, AL078477.5, AC004534.1, AL357052.15, AC006077.1, AC008745.6, Z98752.16, AP000692.1, AC009077.7, AP000031.1, Y18000.1, Z98051.6, AC002418.1, AC008687.4, AC005920.1, AC004234.1, AC012476.8, AL513043.7, L44140.1, AL136305.14, AC010605.4, AL022323.7, AC004825.2, AC013436.5, AL138752.5, AL132712.4, AL359092.14, AC018758.2, AC011510.7, </p>
---------	-----	--------	---------	----------	--

HSNMC45	165	135220 1	1 - 573	15 - 587	AC004659.1, AC007597.3, AL353602.10, AL136039.4, AC008521.5, AL390738.4, AC020931. 5. AA377442.
HSQFP66	166	460537	1 - 463	15 - 477	BE465277, BF593260, A1765036, BE181153, BE181155, AA834498, BF365438.
HSRFZ57	167	892171	1 - 1916	15 - 1930	AC006159.3, AF125348.1, AC084730. 2.
HSUBW09	168	413246	1 - 1007	15 - 1021	AD91103, A1765351, AA703513, BF939824, A1925701, AW295389, AW976578, A1199421, A1422698, A1934983, BE501421, A1127932, AA703493, AW297092, AA677025, AA848037, AA814098, AW404152, AW904298, AW182186, AW197850, AA741121, AA651794, A1678148, AA906044, F18680, AA743764, A1632270, AW590435, BE045258, AA608892.
HSVBU91	169	596868	1 - 713	15 - 727	AW839808, AA077633, BF919965, AC008171.3, AF041056.1, AC004089.25, AC005081.3, AC005015.2, AB006629. 2.
HTAEE28	170	101829 1	1 - 1327	15 - 1341	AW195720, A1765273, A1817356, A1928166, A1283845, BE503396, AW081502, BE349083, BF059350, AA419437, AA758800, AW206944, AA933673, AW104261, A1627565, A1264565, AW469909, AA845240, AA332515, AL021453. 1.
HTECC05	171	135236 5	1 - 825	15 - 839	AA437009, A1806582, A1040972, AA442839, AA759268, A1214390, A1799076, AA918443, AW195596, AA910234.
HTEEB42	172	206980	1 - 1008	15 - 1022	AL522795, AA725566, A1421450, AL522796, A1199779, AA406389, AA912674, AW022835, A1952846, A1123727, BE218057, AW022646, N90730, BF846982, BF845761, A1652914, BF056970, AW020783, A1312805, AW393829, A1017553, AW393887, AW474261, AW264246, BF848293, A1366088, A1418268, T89217, A1052637, AW082343, BF221504, AW593293, AA865038, A1201753, BF091146, A1140139, AA987434, AA410345, BF846977, BF846980, AW900593, BF932982, BF932991, AW865421, AW136481, A1650503, A1432092, T89127, AA974715, AW261924, BE938414, AF255910.1, AY016009.1, AP001694.1, AP000087.1, AP000225.1, AP000226.1, AP000086.1, AP000223. 1.
HTEFU65	173	543396	1 - 1014	15 - 1028	AW072387, R83559, A1924465, A1364031, AW513660, BF361111, AA705541, AL162032. 1.
HTPLP17	174	836072	1 - 794	15 - 808	AW976593, AW275003, BF103848, AA744857, A1458735, AW013800, AA453589, A1684921, A1184517, A1376535, AA621297, A1970221, AW015543, AA969112, AA992291, AA442130, W01308, H72782, AL519628, AA129060, AA460996, AA721433, BF665557, BE170715, AA460649, BG035897, H72781, A1382100, BF541499, AW800324, A1806305, BF885871, A1868710, A1241242, BE386136, AV723953, R75918, N75771, A1865320, A1355277, A1500061, AW088944, A1491842, BE544111, A1866469, AW007955, A1800464, A1335426, A1348777, BE891834, BG179438, AW409772, AL037582, AL037602, AV758017, AV712838, AV713988, A1536563, H42557, AV713143, AV755673, AV702147, A1174799, BE881061, BF814357, BF797305, AV721644, A1345010, AW021717, BG029829, BF793891, BF909758, A1538817, AW827289, AL037454, AW025279, AA766104, AV717730, A1817523, AL046942, BG001293, BF969354, A1554818, BE887537, A1583032, A1473536, BE789373, A1582932, A1590043, AV714010, AV717397, BG121959, AV706915, AV706624, AW027374, AA744531, AV703585, BF924856, A1819545, BE883591, AW196078, A1811631, AL036705, A1929108, BF997967, A1345745, BF921291, BE964497, A1279925, A1873638, BG029053, A1923989, A1288152, A1305745, A1539800,

			<p> BF816685, AI567582, AL040694, BF751288, BG166654, AL039276, AW090102, AI440238, AW161202, AI309306, AI401697, AI679959, AI345131, AL118781, AW078818, AI628325, AI697324, AI471429, T69241, AI470293, AI687568, BG033723, BF826429, AW965840, AA603709, AI371786, AI376748, AI043355, AI499986, BG032919, AI866770, BF924855, AW827211, AW059713, BG107590, AI255884, AI866465, BF092710, BE612681, AV750565, AI452707, AI467721, AI912438, AI288335, AI371243, AW020425, AI568138, AV682249, AV763927, AI972112, BG164558, BF811802, AW020397, AV713908, AW160905, AV681643, AW150826, AI864102, BG031447, AW193467, BG171892, AW162189, AI345415, AA514684, BE927769, AW059765, AL039274, AV648334, BF792047, BF970768, AI866780, AI570140, AI648663, AI363957, BF341210, BF792781, BG253033, AI890887, AL045626, BE957870, AI560679, AI434969, AL110306, AI561228, AA652505, AW172723, AI802244, AW022494, BE536058, AV705066, BF904265, AW410430, BF752997, AW183130, N81164, AI954293, AL120254, AW163464, BG112644, AW021662, AI571000, BG165979, AI942756, AI250852, AV682289, BF812963, AI336575, AL040241, AV682300, AI799364, AI445620, AL040449, AI656270, BF337602, BE965724, BF814412, BG260037, AA806719, AW264895, BE964614, BF904180, BF032768, AW151132, BE965432, AI474646, AW089664, AI653769, AW089275, AW020095, AI434636, Z99428, AW834325, AI923833, AI285419, BG122101, AC000077.2, AK026885.1, BC008365.1, AK024570.1, AB063093.1, Y14040.1, X82434.1, AL136748.1, AF078844.1, AF073483.1, AF285836.1, AL050092.1, AK025958.1, AK025414.1, AK025435.1, AL122118.1, BC003591.1, AF218006.1, AK026613.1, AF218023.1, BC007522.1, BC003410.1, BC007534.1, AF090901.1, AL133072.1, AL136882.1, AK026583.1, BC004310.1, AB062978.1, AK025407.1, AL389935.1, AL136884.1, AI512719.1, AI359596.1, AB056420.1, AF090903.1, AK026556.1, Z82022.1, AL110280.1, D83032.1, AB055805.1, AL137283.1, AB060826.1, AF262032.1, AL133049.1, AK026608.1, BC001328.1, AK027164.1, AL049283.1, AL122050.1, AK026522.1, AL137533.1, AL136864.1, S76508.1, AK024545.1, BC008785.1, BC002750.1, BC005890.1, AK024944.1, AL133665.1, AK025099.1, AF155827.1, BC008455.1, BC003120.1, BC003573.1, AL162008.1, BC001785.1, AK025906.1, BC006164.1, AF225424.1, AK025209.1, AK026762.1, BC001964.1, AL122100.1, AB056372.1, Y14314.1, AK026038.1, AK026534.1, AL133081.1, BC000316.1, AK026630.1, AK025410.1, AF252872.1, BC003122.1, BC005070.1, AL137479.1, BC006807.1, AL162002.1, AL080074.1, AK026784.1, AK027160.1, AB055303.1, AB060887.1, AL136766.1, AK026464.1, BC006408.1, BC006159.1, AL353802.14, AL117460.1, AL117649.1, AK026649.1, AF044323.1, S77771.1, AK024538.1, BC008196.1, AL133067.1, BC003683.1, BC008649.1, AK026528.1, BC008416.1, AB048913.1, AL049382.1, AK027173.1, AK026797.1, AK027146.1, AK000421.1, AB050431.1, AK025524.1, AL137488.1, U88966.1, BC002777.1, AK026462.1, BC002688.1, Y16645.1, AL050024.1, Y10936.1, AK026642.1, AK025084.1, AK000083.1, AB052191.1, AB055368.1, BC006525.1, AF081571.1, AK027111.1, S61953.1, AF090934.1, BC008387.1, AL136615.1, BC008284.1, AL136786.1, BC004530.1, AF110640.1, AF159615.1, AF106697.1, AB063079.1, AL512689.1, BC003590.1, AL157482.1, AL050393.1, AI136540.1, AK027113.1, BC004883.1, AK026480.1, AF177336.1, BC008723.1, AL136789.1, AL133062.1, U72621.3, </p>
--	--	--	---

					BC004960.1, AB049849.1, AL136640.1, AB047623.1, AK024747.1, BC002409.1, AK025375.1, AF232009.1, AF217987.1, AK025092.1, AK025491.1, AL080162.1, BC003548.1, BC002473.1, AK000647.1, BC002844.1, AY033593.1, AL137480.1, AK026506.1, AL162004.1, AK024546.1, BC007499.1, BC005002.1, BC008673.1, AL512718.1, AB060897.1, AK027161.1, AF202636.1, BC000090.1, AF061795.1, AK026452.1, AF151685.1, AL136754.1, BC003684.1, AF260566.1, AK000391.1, AL353956.1, AL136586.1, BC005997.1, AL136784.1, AL133560.1, AK026408.1, BC007053.1, AK024588.1, AK027096.1, BC006091.1, AL357195.1, AF218014.1, AK025857.1, AB060879.1, AK026749.1, AK000257.1, BC007680.1, AL137558.1, AL583915.1, AL117432.1, AL389982.1, S78214.1, AK024992.1, AB051158.1, AL389939.1, BC003614.1, AJ299431.1, AK027082.1, BC002357.1, AF141289.1, AK026947.1, AB048954.1, AB048975.1, AL110221.1, AL096744.1, AB060914.1, AK026631.1, AK026542.1, BC007326.1, AB050407.1, AL136850.1, AB060893.1, AF132676.1, AB060873.1, AF061836.1, AL117583.1, AL137648.1, AL512733.1, AL390184.1, AL137711.1, AB060888.1, AL110158.1, AF090900.1, AF274348.1, AF036268.1, AF274347.1, AW664990, AA608835, BE972717, AA383680, AW572898, AJ028204, AL554902, AL138881.
HTLS08	175	847090	1 - 1884	15 - 1898	BF876683, AI755202, AI066646, AW613805, AA084609, AW769151, BE169870, AA601674, AI561210, BF926568, AW265614, BF826830, AI613389, AL042667, AL042670, AW130427, BF868994, AW471092, AV760019, AW576485, AI281818, AA225956, N64587, AU157209, BF941382, AI340151, AI859834, AW328202, AV754716, AW501278, BG222269, AI955029, AL134440, AI799569, BG250286, AW518030, AW576437, BF725884, BE396138, AW974363, T05118, AA524616, AI732682, AW268329, AI192440, AA669741, AW166920, D58782, AI653493, AW238341, BE301068, AI955718, BF923179, BF526964, AW438850, AW438662, U95742.1, AC019205.4, AC027125.4, AL356299.16, AC007216.2, AC008649.6, AC005484.2, AC005098.2, AC005740.1, AB020868.1, AC008569.6, AL359091.10, AL136527.9, AC005527.3, AC005000.2, AC005529.7, AL121809.6, AC090883.1, AC006312.8, AC004166.12, AF250325.1, AL008726.3, AL139396.17, AC010913.9, Z85987.13, AL590762.1, AL121658.2, AJ246003.1, AP001781.4, AP001694.1, AC004867.5, AL133312.3, AL513550.9, AC008507.8, AL022476.2, AC005520.2, AC068533.7, AL160163.24, AC011485.6, AF111167.2, AC002544.1, AC004702.1, AL158141.14, AC005071.2, AC007191.1, AC005229.1, AL357515.26, AC010412.7, AL161670.4, AF196972.1, AL135927.14, AC007227.3, AC083884.6, AC004089.25, AL445483.13, AF165926.2, AC009060.7, AL359235.3, AC002350.1, AC005952.1, AC007052.4, AC020558.4, AL035071.17, AP000510.2, AC007731.14, AL121586.31, AL354815.10, AC005500.2, AC006014.2, AC005015.2, AL161893.24, AC005726.1, AC004985.2, AL161725.13, AC002390.1, AL450265.11, AL353135.32, AL160231.4, AC026672.44, AC004466.1, AC060231.6, AL360227.17, AL117382.28, AL021397.1, AC083863.2, AC011487.5, AL158824.11, AC018638.5, AL031283.26, AL121761.5, AC004242.1, AL020993.1, AL512641.9, AL121936.17, AC005280.3, AL035587.5, AC020916.7, AC067941.7, AC009812.17, AC012476.8, AL136228.8, AP001728.1, AL354808.24, AL049561.16, AL352984.4, AP000046.1, AC010378.6, AC000381.1, AC006480.3, AC006023.2, AL050308.9, AC005531.1, AL049776.3, AP000114.1, AC008551.5, AL031680.20, AL391827.18,
HTLEP53	176	634852	1 - 804	15 - 818	

					AP001360.4, AL354707.17, AF111168.2, AL031683.2, U89337.1, AC010605.4, AL035367.5, AC002546.1, AL138724.12, AL033521.2, AC020906.6, AC078846.2, AC006452.4, AC007003.4, AC009244.24, AL049547.10, AL163279.2, AF064861.1, AC000025.2, AC027319.5, AL391280.15, AC008083.23, AC004253.1, AC008598.5, Y10196.1, AL049766.14, AL512666.6, AL138784.30, AC008891.7, AC004840.3, AC008387.3, AC005377.2, AC000360.35, AL049637.43, AL512378.7, AC008753.8, AC005488.2, AF001548.1, AC010422.7, AC009179.17, AC008623.4, AC004876.2, AP001717.1, AP001709.1, AC011465.4, AP000901.5, AL160471.5, AC006329.5, AL034405.16, AC008521.5, L44140.1, AC008481.7, U15177.1, AL162578.13, AC006449.19, Z97876.1, AC016830.5, AC008946.6, AL137792.11, AL109743.4, Z83844.5, AL049631.7, AC025275.4, AC091736.1, AP002453.3, AC006512.12, AC004491.1, AL356095.11, AC005291.1, AL136297.3, AC003982.1, AL022318.2, AC009086.5, AC005736.1, AC004824.3, Z84466.1, AP001670.1, AL157823.9, AC018904.6, AC002425.1, AF312032.1, AL109806.22, AL035413.19, AC006027.1, Z84469.1, AL513366.11, AC011737.10, AF196779.1, AC026756.15, AC008745.6, AC090527.3, AC006038.2, AC005318.1, AL391137.11, AC010543.8, AC005081.3, AC005522.2, AC005231.2, AC013726.7, AL109804.41, AC005399.19, AC004832.3, AC022148.5, AF134726.1, AC022007.3, AP002851.2, AL136084.11, AL031295.1, AP001748.1, AL121834.20, AC007686.5, AL049872.3, AL049569.13, AC016993.4, AC004805.1, AL133551.13, AL136966.27, AC004167.1, AP000237.1, AL117186.3, AL161747.5, AC005288.1, X54156.1, U94788.1, Z99127.1, AC016691.10, AC016025.12, AC010526.7, AC004890.2.
HTPCS72	177	854941	1 - 3421	15 - 3435	AV716024, BF032601, BE884480, BG107409, BE896847, AA534380, BF996760, BE935961, AA625472, BF593809, AI275974, AA758011, AI091865, AA770655, AA826573, AA642458, AA284480, AA308157, BF316735, AA150509, AI338707, H98214, AI085686, AI613457, AW007656, BE677803, BE092569, AW083271, BF890758, AA156713, BF315290, BF687549, AI079204, R38877, AI561066, AW629504, Z44870, AI638057, AA468549, BF445676, AW771735, BF852685, AW173317, BF882397, BE092420, AA368918, AW969242, AI254739, T80580, AA406249, F07793, R55262, R12721, BE832360, R55263, AW900776, BF357645, F05814, Z40638, F04054, AA321781, AW021358, AA714089, BF886411, BE149465, H91564, AA954780, BF871030, AI640665, BF036620, F02061, AA243079, BF307290, BF835491, BE774931, H90643, N44003, AA307326, AW135695, BE927559, AA242996, BF757045, AW999558, AI002239, BE567146, D19832, AW672798, BF089866, W73266, AF017388, BE932984, BE832354, BE707285, AB040946.1, AL008639.15, AF139898.1, AK027079.1, AF131746.1.
HTPIH83	178	919916	1 - 1467	15 - 1481	BE513091, BE304667, BG164062, AW385836, AW837727, AW837724, BF032123, BF541534, AW006504, AI769564, AW837723, AA552647, AW015998, AI343787, AI285131, AA976345, BE048787, AI949846, AI685788, AI953481, AW083920, BF819923, AI262767, AW194732, AA345449, AA639438, T86266, AI469683, AI244378, AI659323, T86158, BF758311, BG164241, AI932964, AV647382, BF104997, AI913916, AF177340.1, AL158821.16, AF250558.1.
HTSEW17	179	460579	1 - 638	15 - 652	AA779073, AI860913, AI028060, AI024955, BE549714, AW136463, R07163, AW612172, BF773051, AF007146.1, AF381980.1.
HTTBI76	180	637725	1 - 1697	15 - 1711	AA059411, BE568135, BE856883, BF435859, BF977217, AV701624, BE566398, BE856637, AA429722,

					BE564953, BE568948, BF214557, AA196423, AW237471, AA716665, AI377511, AA193289, N51319, BF248318, AI796263, AI770155, AA045194, BE380112, BF029088, AI185077, AA442760, BF214729, BE865742, AA810811, AI572127, AI494075, BE777718, AI128609, AA933879, BF027898, BF691014, BF977570, AV702879, AA421072, N63065, BE866018, AI373224, R99289, BG003427, BE568709, AA919169, AI580336, AW024454, BF057794, AA731146, AI128610, BF105164, AA062583, BF031391, BE866602, BF238619, AI758175, AA045378, D61992, BF211153, R99375, AA420992, AA194235, AA976350, AW135598, AI648675, BF436083, BE392607, AA383499, BF368270, AA878813, AA877180, BE379677, AI219249, AA846496, AV760348, AA380012, BE866426, AA453722, BF687711, BF213063, H84990, H86604, H86921, AI519369, AA383353, BE742087, AA007586, T85467, BE514581, BF573588, BF028113, AI521923, BF091941, BE548812, AI244008, H55168, AA379174, BE621508, AI200967, BF346162, AI137861.5, AC005690.8, AF277188. 1.
HTTBS64	181	100815 9	1 - 2044	15 - 2058	AW801486, AI157701.2, AC006356.3, AC079033.12, AC025159.28, AL360078.16, AF002997.2, AI034428.4, AP001693.1, AL049873.3, Z83819.1, AL389889.11, AP001669.1, AL035552.9, AL590043.7, AC005406.2, AC009069.3, AC048346.13, AL354937.12, AL050401.5, AL136324.6, AL390800.4, AC0073941.5, AP001597.1, AC012464.24, AC008277.4, AL121985.13, AC004988.2, AL359085.14, AC016623.5, AL163213.2, AL359850.7, AL357894.6, AL133247.1, AF003528.1, AC0090946.1, AL021877.1, AL157779.6, AL137245.11, AC008250.23, AL031391.1, AL355530.6, AL589740.4, AL354750.12, AC002076.1, AL139090.11, AL354896.16, AC021863.5, AL121577.1, AL049732.11, AC012003.9, AL117259.6, AC010144.4, AC068061.5, AC068800.28, AL512452.7, AC010142.4, AC026691.4, AL354802.15, AL359252.17, AL512662.8, AC008506.7, AL022718.1, AC008462.6, AL356499.16, AL359332.2, AC019196.10, AL138479.4, AL137061.12, AP001331.1, AC019179.4, AL450333.13, AF003529.1, AL133444.4, AC034195.6, Z98753.1, AL161630.12, AL359273.11, AC005799.1, AL390247.11, AL392087.7, AL078594.36, AL139087.13, AL359999.11, AC004216.1, AC007543.4, AL033522.1, Z99571.1, AC012405.5, AL390959.12, AL160236.4, AL138773.4, AC0079457.14, AC007158.10, AL359636.17, AC006979.2, AC002302.1, AL445687.5, AC005873.3, AC023095.7, AL136100.12, AC007214.13, AL162500.15, AC004160.1, AP001533.4, U82828.1, AC073273.9, AL445985.10, AC006351.3, AC002065.1, AC022081.32, AL158053.14, AC010591.8, AC005284.1, AL355578.4, AC010534.7, AC005249.1, AC009466. 17.
HTXJM03	182	603918	1 - 2384	15 - 2398	AL518347, BE742019, AI114655, BF514929, AL118845, BF880731, AA236989, AI140989, AW813468, BE841331, AW582445, AA252594, AA618239, AI823453, AI280443, BF988837, AI042692, BF989072, H15090, AW391644, BG011632, H15570, Z43079, H15630, AW813319, H22799, Z39170, AA252414, F07601, F11156, F05157, AA746494, H15091, F08825, W68008, AW813329, F03848, F01404, AA804351, AC005829.1, AB033093.1, BC006271. 1.
HTXON32	183	838288	1 - 1491	15 - 1505	AA746911, AA410788, AA704393, AA181917, BG222813, BE301584, AA683069, AA507822, AI056177, AA228778, AA084609, BE178231, BE178064, AI678867, AU147162, AV747362, AI857836, BF821968, AI754170, AW769654, AA825827, AA468975, AW513071, AW328202, AW069412, BF950533, AI962030, AI188049, BG250286, AI915075, BG222564, BG222326, AV733824, AV759632,

					AA584862, BE246405, AK000114.1, AL035088.1, AC003691.1, AP001359.4, AC004605.1, Z94056.1, AC010422.7, AC004125.1, AC012157.20, AC007912.6, AC005368.1, AL031257.1, AL354680.14, AC0079353.5, AF130417.4, AC005011.2, AP001672.1, AC005255.1, AL445071.14, AL354977.10, AC006013.3, AP000851.4, AC008945.6, AC003689.1, AC002288.1, AC006211.1, AP002751.3, AL133391.5, Z98200.8, AF001905.1, AC006597.2, AC012450.9, AC005840.2, AC008699.5, AC007934.7, AC002422.1, AP000347.1, AL162831.5, AC009408.3, AC026191.3, AL136992.22, AC007436.1, AL590381.4, AC008840.4, AL008721.1, AC005841.3, AC021325.5, AL451061.8, AL117382.28, AC008511.6, AC004846.2, AL355365.10, AC004531.1, AC007652.1, AP001972.4, AP001727.1, AC087237.14, AC010465.7, AL157877.11, AL355984.11, AC010601.5, AL356095.11, AC004916.2, AC008264.10, AC025457.5, AP001561.4, AP000008.1, AC018719.4, AC007773.1, AC009094.7, AC010234.5, AC011890.4, AL355812.23, AC025471.5, AC020913.6, AP000704.2, AL135905.6, AC021863.5, AC022087.8, AC004659.1, AL022329.9, AC027342.4, AC019212.4, AC017100.4, AC020928.6, AC004104.1, AC019184.3, AL160274.9, AL161899.21, Z82194.1, AC026811.4, AC015842.9, AC002420.1, AL035079.14, AL390239.16, AC008012.8, AP001691.1, AL138819.9, AC009142.10, AL512449.6, AC024028.10, AC079408.25, AC005015.2, AL451126.18, AF011889.1, AL032821.2, AC004999.1, AF131216.1, AL109963.4, AL021939.1, AC008474.7, AC004089.25, AL391666.5, AL353135.32, AC005081.3, AF001551.1, AL096699.11, AC012312.8, AL031657.5, AL158832.13, AC006030.2, AL355336.15, AL050320.19, AC002553.1, AC005480.3, AF017104.1, AP001825.4, AC009779.18, AC016554.7, AC037433.6, AL033519.42, AC006313.1, AC019050.4, AL109623.9, AC012150.16, AL138749.13, AP000067.1, AL132994.4, AC004491.1, AC007993.15, AC025165.27, AF196970.1, AL157817.13, AC002377.1, AP000495.1, AB020869.1, AC009224.6, AC010582.6, AL160397.17, AL136040.5, AC068513.7, AL133173.19, AC004057.1, AC004616.1, AL353777.18, AP003473.2, AC008958.6, Z97635.10, AC073057.6, AC008427.7, AL137790.4, AC006316.2, AC005537.2, AC067941.7, AL035604.15, AC004021.1, AL035462.21, Z84480.1, AC003009.1, AC016778.3, AL355312.24, AC005746.1, AC005768.17, AC003690.1, Z97054.1, AP000577.4, AC069292.12, AL138696.16, AL354799.12, AL158828. 14.
HUFCJ30	184	638402	1 - 854	15 - 868	AL533274, AI741266, AI194264, BF438670, BE855763, AI912191, BF109379, AI815187, AA521107, BE646628, AI911233, AA828445, AA429411, AI912933, AI423970, AI242299, BE042993, AW276617, AA905840, AA464614, AI394374, AW340805, AI096492, AI221797, AW129415, AI554269, AW969178, BG055418, AW029033, AW044596, AA582358, BE882568, AI870051, AA233165, AI933519, AI370473, BE676140, AW292630, AA429458, F03916, AA233241, F03174, AA193481, H61820, AA193313, AW080606, AL533316, AA442046, AW975876, AW971403, AW974801, AW976024, AW975037, AW971975, AW972292, AW975965, AW975031, AW975002, AW971404, AW975019, AW975952, AW979127, AW974786, AW975105, AW975032, AW974964, AW979238, AW971968, AW975930, AW975954, AW969673, AW979090, AW975154, AW979002, AW969727, AW976023, AW975434, AW979204, AW969680, AW969643, AW974806, AW979098, AW975942, AW975971, AW973213, AW979176, AW973717, AW971326, AW974658, AW973219, AW969885, AW974338, AW971375.

					AW974998, AW975981, AW979208, AW970969, AW975149, AW979169, AW974975, AW975027, AW971732, AW970936, AW974802, AW974823, AW970942, AW975028, AW972377, AW973270, AW970010, AW972296, AW973185, AW975020, AW975632, AW969839, AW973750, AW973819, AW969816, AW976511, AW979294, AW979106, AW976031, AW975966, AW975058, AW975015, AW979212, AW976982, AW971378, AW976000, AW969852, AW979220, AW975585, AW979219, AW973209, AW974785, AW975692, AW972680, AW974101, AW973967, AW974971, AW972880, AW970962, AW972817, AW969861, AW973785, AW975025, AW975022, AW975649, AW973252, AW975959, AW973812, AW976506, AW979076, AW969637, AW972440, AW972154, AW971254, AW970889, AW979232, AW971305, AW979142, AW975230, AW973821, AW975899, AW972774, AW975167, AW972226, AW972660, AW973814, AW973775, AW973217, AW969768, AW975896, AW973779, AW976003, AW979054, AW975941, AW973211, AW969874, AW970113, AW972884, AW973189, AW973202, AW972695, AW973805, AW972719, AW976515, AW975976, AW979165, AW976510, AW971954, AW975975, AW969884, AW972943, AW969759, AW979083, BF592735, AW970587, AW973650, AW979175, AW969931, AW973986, AW979064, AW975938, AL359608. 1.
HUVEB53	185	571200	1 - 1488	15 - 1502	BE786669, AA453165, BG027754, AI694207, AW751021, BE140357, BE140309, BF673837, AI827679, AI597942, AI831626, BF572868, AW131344, AV726756, BE844218, BE162515, AA188243, AW188015, AW044629, AA877403, AI127993, BF691063, AA989288, AA453945, AA191206, AV748508, AA481849, AA405313, BF670519, AI167809, AA431686, AA846755, AI041097, AA305896, BE844200, BE844214, AI160824, H13901, AA655009, R68945, W26226, AA861877, AW974213, H11654, AW953548, AA453440, AI587514, AI076451, AA403350, H04206, AW751099, AA855040, AA974088, H43741, Z33442, AA825311, AA036965, AA188839, BE844205, H04207, AA233377, AA903946, AV693909, BE968480, AA761680, AV724398, AV724896, AA352991, AA330417, AA887483, D57665, N51756, AA206627, D61904, BF440004, AI248842, H58383, AA975213, D79380, AA205353, BE785631, AA344562, AA864363, D61991, BE467097, AA773771, AA649813, AW592162, AA642834, D79365, N47004, AW900901, AA036966, D61899, D58112, AA579902, AA865874, AA722600, R68832, R40852, H45338, BF131609, AA007516, H13852, AI828027, AA431480, BE149422, AV686924, AW074757, D20526, AB032988.1, AL021396. 8.
HWAAD63	186	838626	1 - 3294	15 - 3308	BG058664, AW953071, BF668217, AL046409, AI284640, AW406162, BF852604, AU123691, AL046205, AW303196, D82290, AW301350, AI334443, AV761286, AL121235, AW274349, AW600804, BF339640, BF677892, AV763892, BG032943, AI572924, AI801482, AI431303, AL044940, AV740801, AV764490, BG249643, AV762098, AI270117, AW969629, AI732378, AW265385, AI963720, AI708009, AI350211, AU147104, AW473163, AA669840, AV735495, AI149478, AV763971, AA581903, AV759518, AV760937, AI754955, AL041690, AI583283, AV710066, AV763550, BG236735, AU145314, AW502975, AV742057, BG167743, BF940837, AW193265, AV760777, BF914859, BF918590, AF074667, AV763122, BF918640, BE908796, BG036337, AW513362, AA491814, AV759362, BF725315, AV762050, AV763354, AW021583, BF919090, AI203955, AA531580, AA613232, AA490183, D82542, AW576391, AI623720, AV739452, AV728425, BE350475, AW500125, AA521323,

AA665330, AV702857, AV730391, BF347791, AA610491, T40452, AA584167, AW474160, AI613280, AV762139, BE253048, AI192631, AI732865, AW020992, AA938105, AV733830, AF074677, AV652936, AW276817, BE827393, AW088846, AW438643, AI434695, AI345654, AW270270, AI610159, AW274346, AW265170, BF680041, BF854876, AA469451, AI589230, AA584145, AW833862, BE047069, AI570261, BF347740, AI619997, AW264934, AW424220, BF475381, AW518220, BF942454, AV762009, AI708125, BF697673, AW148792, BE297262, AW731867, AV739505, AA457542, BF991286, BF806176, AV728410, AU159337, AW089322, BE164494, AA774222, AI345518, AW963497, AV763255, AI696962, AL041706, F36273, AA496508, AV764228, AA478355, AV713243, AV761613, BE677379, BF736198, BF916517, AW079135, AV735370, R99597, AA652764, AW029038, AV725423, AA410828, AW169517, BG250302, AV761786, BE393367, BF872630, AF063563, AV764241, AA601294, BF827410, BF812839, AL119691, AV760378, AA177061, BG177715, BF674620, AI298710, AW169151, AA502104, AA563681, AI345675, AA633798, AV761925, AA682912, BF965007, AV73710, BF680074, AV762768, AA579362, BE139146, BF217299, AV762111, AV764578, AL118559.6, AB038653.1, AC020904.6, AC009497.3, AC006581.16, AF001549.1, AC004638.1, AC008267.6, AL121601.13, AL109865.36, AL356915.19, AC018809.4, AL163973.1, AC023908.6, AC011465.4, AL160237.4, AP000459.3, AC005081.3, AC044797.5, AC009154.5, AP001760.1, AL035367.5, AC007298.17, AL139350.17, AC006329.5, AC004019.20, AC006038.2, AC011455.6, AC008616.6, AL354932.26, AC011461.4, AL161892.9, AC005911.6, AC008265.15, U80017.1, AP003357.2, U91323.1, AC018636.4, AC005562.1, AL096701.14, AL080243.21, AC011450.4, AL133367.4, AL162458.10, AL354720.14, AC020658.6, AL158830.17, AL050318.13, AC005839.1, AP001687.1, AC009144.5, AC005041.2, Z99495.1, AC002565.1, AC022007.3, AC018769.2, AP000031.1, AC008372.6, AC011811.42, AC008688.7, AC009298.3, AP000047.1, AL445222.9, AL163248.2, AL139113.21, AC006435.7, AL136219.17, AC011495.6, AC008562.4, AC022308.17, AC008537.5, AP001667.1, AL133399.1, AL353135.32, AL121809.6, AC005696.1, AC073838.6, AC002476.1, AC006028.3, AP000115.1, AL445928.8, Z69666.1, AC005522.2, AC084783.2, AL133485.3, AC016025.12, AC004906.3, AC008649.6, AP000553.1, AC009470.4, AL031054.1, AC007193.1, AP000338.2, AL117334.29, AC009530.5, AP001346.1, AL034380.26, AC016830.5, AC008403.6, AL049550.5, AC027644.9, AC011930.5, AL109965.34, AC006241.1, AL049869.6, Z83844.5, Z98941.1, AL031283.26, AL159191.4, AP000216.1, AC009967.7, AC015842.9, AL136295.3, AL139330.17, AC008745.6, AC005527.3, AC007731.14, U47924.1, AC012377.5, AC025212.5, AC005500.2, AC018751.30, Z93241.11, AL078638.9, AL354993.24, AC016769.10, AC005324.1, AL355517.12, AC074121.16, AC012170.6, AC006538.1, AP000962.2, AC004650.1, AC083884.6, AL354935.23, U52111.2, AC016027.15, AC079363.19, AP000113.1, AP000045.1, AL136123.19, AC007011.1, AL357150.7, AC008753.8, AL121675.36, AC002551.1, AL157838.24, AC009516.19, AC004865.1, AL139230.25, AC005529.7, AL050335.32, AC007216.2, AL049759.10, AP001716.1, AL021546.1, AC000360.35, AP001718.1, AE006639.1, AC025436.2, AL359091.10, AC004940.1, AC008101.15, AC003029.2, AI352978.6, AC020983.7, AI118520.26, AC007772.3, AC005154.1, AC078878.20			
---	--	--	--

					AL136980.5, AC005778.1, AC004971.3, AL033383.26, AC005921.3, AL15995.8, AC008068.4, AL008718.23, U95742.1, AC068712.6, AL024474.1, AC005031.1, AC017091.8, AC090514.1, AP001666.1, AL158040.13, AL161799.19, AL133387.8, AC003108.1, AC005808.1, AL109825.23, AC004033.3, Z98051.6, AC005295.1, AL1353764.9, AC011236.8, AL132768.15, AC006285.11, Z99716.4, AL139396.17, AL096840.25, AL022098.1, AC005052.2, AC002300.1, AC007066.4, AL109797.18, AC004686.1, AL031662.26, AC008812.7, AL161656.20, AL136961.19, AC007404.4, AC020550.4, AJ003147.1, AP001858.4, AC021203.5, AC011559.3, AL117258.4, AC007620.30, AC010553.6, AP002028.1, AL1356575.8, AP000299.1, AL121748.6, AL136300.22, AC016257.22, AC003684.1, AC004941.2, AL157406.19, AL049694.9, AL162853.17, U66059.1, AC026464.6, AL121972.17, AC013264.4, AL162426.20, AC006345.4, AC090960.1, AL049742.7, AC005037.2, AP000359.1, AC007051.3, AC018633.2, AL133174.15, AC008474.7, AC018635.6, AB023049.1, AC034198.6, AC022211.5.
HWADJ89	187	799506	1 - 1755	15 - 1769	AW958273, AW377130, AW574767, AW138853, BF111962, AA135712, AA156931, AW264402, AW117200, AI684896, AW739989, AA524553, AI394626, AI754796, AI860485, AI989549, AW129957, AI672796, BG056354, AA040909, AI000898, AI421190, AI693729, AW512733, AW044450, AI090274, AW205364, AW081734, BE939287, N35410, AA788655, N55117, AA844145, AI091868, N62863, AW302517, AI361489, AI628038, AA765992, AI800010, AI817849, BF800164, AI285397, AW403436, AA658416, AA648845, F13408, N73777, AA983941, R34886, AI024148, T04873, AA310563, Z33435, R72500, AI219780, AI149773, BG248348, R49268, BE305119, BE293618, AI743430, AW440724, T78828, BE249965, F10993, BE250024, AI371489, BE171979, N77769, AW235832, AI204426, R34492, N48042, BF899137, BF842700, R34372, Z38685, N99398, AI857456, AW841803, BE176205, AW899803, AA665233, AI290874, AW591407, AI432644, BF757092, AI623302, AW968355, AI431347, AI432653, AW081103, AI431230, AI431328, AI432654, AI432655, AI431310, AI431312, AI432650, AI432677, AW968356, BE672759, AI431353, AW971740, AW972091, AW972093, AW968729, AI431307, AI431316, AI432661, AI431354, AI431315, AI431337, AI431257, AI492519, BE672745, BE672732, AI791349, AI432666, AI432675, AW128900, BE672748, AI431238, AI492520, BE672719, AI432651, AI432647, AI431330, AI432674, AI432672, BF448552, AW972092, BE672767, AI431243, AI431248, AI432665, AI432657, AI432658, AI432649, BE672644, AI431255, BE672774, BE672742, AW969229, AI431254, BF589777, AI431350, AI431231, AI432662, AI431345, BE672738, AI431357, AW858522, AI431241, AI431351, AI431323, AI431346, AI431247, AI431318, AI432676, AI432673, AI431235, AI431321, AW128897, AI431340, AI432643, BE672792, AW128846, AI432664, AI431246, AW972090, AI432645, AW128884, BE672743, AI492510, BE672640, AL042931, AI431314, AW129223, AI431308, BE672749, BE672744, AI492509, BE672622, AI431751, BE672627, AL042729, AL045494, AL042655, BE672626, AL042523, AL042519, AL042853, AL031296.1, AK026719.1, AB007922.2, AF052104.1, AF064854.1, AL133082.1.
HWBFX31	188	799427	1 - 1663	15 - 1677	H93613, N75773, N22551, AA884923, AW873751, H93612, AC039057.8.

Description of Table 4

Table 4 provides a key to the tissue/cell source identifier code disclosed in Table 1B.2, column 5. Column 1 of Table 4 provides the tissue/cell source identifier code disclosed in Table 1B.2, Column 5. Columns 2-5 provide a description of the tissue or cell source. Note that "Description" and "Tissue" sources (i.e. columns 2 and 3) having the prefix "a_" indicates organs, tissues, or cells derived from "adult" sources. Codes corresponding to diseased tissues are indicated in column 6 with the word "disease." The use of the word "disease" in column 6 is non-limiting. The tissue or cell source may be specific (e.g. a neoplasm), or may be disease-associated (e.g., a tissue sample from a normal portion of a diseased organ). Furthermore, tissues and/or cells lacking the "disease" designation may still be derived from sources directly or indirectly involved in a disease state or disorder, and therefore may have a further utility in that disease state or disorder. In numerous cases where the tissue/cell source is a library, column 7 identifies the vector used to generate the library.

Table 4

Code	Description	Tissue	Organ	Cell Line	Disease	Vector
AR022	a_Heart	a_Heart				
AR023	a_Liver	a_Liver				
AR024	a_mammary gland	a_mammary gland				
AR025	a_Prostate	a_Prostate				
AR026	a_small intestine	a_small intestine				
AR027	a_Stomach	a_Stomach				
AR028	Blood B cells	Blood B cells				
AR029	Blood B cells activated	Blood B cells activated				
AR030	Blood B cells resting	Blood B cells resting				
AR031	Blood T cells activated	Blood T cells activated				
AR032	Blood T cells resting	Blood T cells resting				
AR033	brain	brain				
AR034	breast	breast				
AR035	breast cancer	breast cancer				
AR036	Cell Line CAOV3	Cell Line CAOV3				
AR037	cell line PA-1	cell line PA-1				
AR038	cell line transformed	cell line transformed				
AR039	colon	colon				
AR040	colon (9808co65R)	colon (9808co65R)				
AR041	colon (9809co15)	colon (9809co15)				
AR042	colon cancer	colon cancer				
AR043	colon cancer (9808co64R)	colon cancer (9808co64R)				
AR044	colon cancer 9809co14	colon cancer 9809co14				
AR050	Donor II B Cells 24hrs	Donor II B Cells 24hrs				
AR051	Donor II B Cells 72hrs	Donor II B Cells 72hrs				
AR052	Donor II B-Cells 24 hrs.	Donor II B-Cells 24 hrs.				
AR053	Donor II B-Cells 72hrs	Donor II B-Cells 72hrs				
AR054	Donor II Resting B Cells	Donor II Resting B Cells				

AR055	Heart	Heart							
AR056	Human Lung (clonotech)	Human Lung (clonotech)							
AR057	Human Mammary (clonotech)	Human Mammary (clonotech)							
AR058	Human Thymus (clonotech)	Human Thymus (clonotech)							
AR059	Jurkat (unstimulated)	Jurkat (unstimulated)							
AR060	Kidney	Kidney							
AR061	Liver	Liver							
AR062	Liver (Clonotech)	Liver (Clonotech)							
AR063	Lymphocytes chronic lymphocytic leukaemia	Lymphocytes chronic lymphocytic leukaemia							
AR064	Lymphocytes diffuse large B cell lymphoma	Lymphocytes diffuse large B cell lymphoma							
AR065	Lymphocytes follicular lymphoma	Lymphocytes follicular lymphoma							
AR066	normal breast	normal breast							
AR067	Normal Ovarian (4004901)	Normal Ovarian (4004901)							
AR068	Normal Ovary 9508G045	Normal Ovary 9508G045							
AR069	Normal Ovary 9701G208	Normal Ovary 9701G208							
AR070	Normal Ovary 9806G005	Normal Ovary 9806G005							
AR071	Ovarian Cancer	Ovarian Cancer							
AR072	Ovarian Cancer (9702G001)	Ovarian Cancer (9702G001)							
AR073	Ovarian Cancer (9707G029)	Ovarian Cancer (9707G029)							
AR074	Ovarian Cancer (9804G011)	Ovarian Cancer (9804G011)							
AR075	Ovarian Cancer (9806G019)	Ovarian Cancer (9806G019)							
AR076	Ovarian Cancer (9807G017)	Ovarian Cancer (9807G017)							

AR077	Ovarian Cancer (9809G001)	Ovarian Cancer (9809G001)					
AR078	ovarian cancer 15799	ovarian cancer 15799					
AR079	Ovarian Cancer 17717AID	Ovarian Cancer 17717AID					
AR080	Ovarian Cancer 4004664B1	Ovarian Cancer 4004664B1					
AR081	Ovarian Cancer 4005315A1	Ovarian Cancer 4005315A1					
AR082	ovarian cancer 94127303	ovarian cancer 94127303					
AR083	Ovarian Cancer 96069304	Ovarian Cancer 96069304					
AR084	Ovarian Cancer 9707G029	Ovarian Cancer 9707G029					
AR085	Ovarian Cancer 9807G045	Ovarian Cancer 9807G045					
AR086	ovarian cancer 9809G001	ovarian cancer 9809G001					
AR087	Ovarian Cancer 9905C032RC	Ovarian Cancer 9905C032RC					
AR088	Ovarian cancer 9907 C00 3rd	Ovarian cancer 9907 C00 3rd					
AR089	Prostate	Prostate					
AR090	Prostate (clonotech)	Prostate (clonotech)					
AR091	prostate cancer	prostate cancer					
AR092	prostate cancer #15176	prostate cancer #15176					
AR093	prostate cancer #15509	prostate cancer #15509					
AR094	prostate cancer #15673	prostate cancer #15673					
AR095	Small Intestine (Clonotech)	Small Intestine (Clonotech)					
AR096	Spleen	Spleen					
AR097	Thymus T cells activated	Thymus T cells activated					
AR098	Thymus T cells resting	Thymus T cells resting					
AR099	Tonsil	Tonsil					
AR100	Tonsil germinal center centroblast	Tonsil germinal center centroblast					

AR101	Tonsil germinal center B cell	Tonsil germinal center B cell				
AR102	Tonsil lymph node	Tonsil lymph node				
AR103	Tonsil memory B cell	Tonsil memory B cell				
AR104	Whole Brain	Whole Brain				
AR105	Xenograft ES-2	Xenograft ES-2				
AR106	Xenograft SW626	Xenograft SW626				
AR119	001: IL-2	001: IL-2				
AR120	001: IL-2.1	001: IL-2.1				
AR121	001: IL-2_b	001: IL-2_b				
AR124	002: Monocytes untreated (1hr)	002: Monocytes untreated (1hr)				
AR125	002: Monocytes untreated (5hrs)	002: Monocytes untreated (5hrs)				
AR126	002: Control.1C	002: Control.1C				
AR127	002: IL2.1C	002: IL2.1C				
AR130	003: Placebo-treated Rat Lacrimal Gland	003: Placebo-treated Rat Lacrimal Gland				
AR131	003: Placebo-treated Rat Submandibular Gland	003: Placebo-treated Rat Submandibular Gland				
AR135	004: Monocytes untreated (5hrs)	004: Monocytes untreated (5hrs)				
AR136	004: Monocytes untreated 1hr	004: Monocytes untreated 1hr				
AR139	005: Placebo (48hrs)	005: Placebo (48hrs)				
AR140	006: pC4 (24hrs)	006: pC4 (24hrs)				
AR141	006: pC4 (48hrs)	006: pC4 (48hrs)				
AR152	007: PHA(1hr)	007: PHA(1hr)				
AR153	007: PHA(6HRS)	007: PHA(6HRS)				
AR154	007: PMA(6hrs)	007: PMA(6hrs)				
AR155	008: 1449 #2	008: 1449 #2				
AR167	1449 Sample	1449 Sample				

AR168	3T3P10 1.0uM insulin	3T3P10 1.0uM insulin				
AR169	3T3P10 10nM Insulin	3T3P10 10nM Insulin				
AR170	3T3P10 10uM insulin	3T3P10 10uM insulin				
AR171	3T3P10 No Insulin	3T3P10 No Insulin				
AR172	3T3P4	3T3P4				
AR173	Adipose (41892)	Adipose (41892)				
AR174	Adipose Diabetic (41611)	Adipose Diabetic (41611)				
AR175	Adipose Diabetic (41661)	Adipose Diabetic (41661)				
AR176	Adipose Diabetic (41689)	Adipose Diabetic (41689)				
AR177	Adipose Diabetic (41706)	Adipose Diabetic (41706)				
AR178	Adipose Diabetic (42352)	Adipose Diabetic (42352)				
AR179	Adipose Diabetic (42366)	Adipose Diabetic (42366)				
AR180	Adipose Diabetic (42452)	Adipose Diabetic (42452)				
AR181	Adipose Diabetic (42491)	Adipose Diabetic (42491)				
AR182	Adipose Normal (41843)	Adipose Normal (41843)				
AR183	Adipose Normal (41893)	Adipose Normal (41893)				
AR184	Adipose Normal (42452)	Adipose Normal (42452)				
AR185	Adrenal Gland	Adrenal Gland				
AR186	Adrenal Gland + Whole Brain	Adrenal Gland + Whole Brain				
AR187	B7(1hr)+ (inverted)	B7(1hr)+ (inverted)				
AR188	Breast (18275A2B)	Breast (18275A2B)				
AR189	Breast (4004199)	Breast (4004199)				
AR190	Breast (4004399)	Breast (4004399)				
AR191	Breast (4004943B7)	Breast (4004943B7)				
AR192	Breast (4005570B1)	Breast (4005570B1)				
AR193	Breast Cancer (4004127A30)	Breast Cancer (4004127A30)				
AR194	Breast Cancer (400443A21)	Breast Cancer (400443A21)				
AR195	Breast Cancer (4004643A2)	Breast Cancer (4004643A2)				

AR196	Breast Cancer (4004710A7)	Breast Cancer (4004710A7)				
AR197	Breast Cancer (4004943A21)	Breast Cancer (4004943A21)				
AR198	Breast Cancer (400553A2)	Breast Cancer (400553A2)				
AR199	Breast Cancer (9805C046R)	Breast Cancer (9805C046R)				
AR200	Breast Cancer (9806C012R)	Breast Cancer (9806C012R)				
AR201	Breast Cancer (ODQ 45913)	Breast Cancer (ODQ 45913)				
AR202	Breast Cancer (ODQ45913)	Breast Cancer (ODQ45913)				
AR203	Breast Cancer (ODQ4591B)	Breast Cancer (ODQ4591B)				
AR204	Colon Cancer (15663)	Colon Cancer (15663)				
AR205	Colon Cancer (4005144A4)	Colon Cancer (4005144A4)				
AR206	Colon Cancer (4005413A4)	Colon Cancer (4005413A4)				
AR207	Colon Cancer (4005570B1)	Colon Cancer (4005570B1)				
AR208	Control RNA #1	Control RNA #1				
AR209	Control RNA #2	Control RNA #2				
AR210	Cultured Preadipocyte (blue)	Cultured Preadipocyte (blue)				
AR211	Cultured Preadipocyte (Red)	Cultured Preadipocyte (Red)				
AR212	Donor II B-Cells 24hrs	Donor II B-Cells 24hrs				
AR213	Donor II Resting B-Cells	Donor II Resting B-Cells				
AR214	H114EP12 10nM Insulin	H114EP12 10nM Insulin				
AR215	H114EP12 (10nM insulin)	H114EP12 (10nM insulin)				

AR216	H114EP12 (2.6ug/ul)	H114EP12 (2.6ug/ul)					
AR217	H114EP12 (3.6ug/ul)	H114EP12 (3.6ug/ul)					
AR218	HUVEC #1	HUVEC #1					
AR219	HUVEC #2	HUVEC #2					
AR221	L6 undiff.	L6 undiff.					
AR222	L6 Undifferentiated	L6 Undifferentiated					
AR223	L6P8 + 10nM Insulin	L6P8 + 10nM Insulin					
AR224	L6P8 + HS	L6P8 + HS					
AR225	L6P8 10nM Insulin	L6P8 10nM Insulin					
AR226	Liver (00-06-A007B)	Liver (00-06-A007B)					
AR227	Liver (96-02-A075)	Liver (96-02-A075)					
AR228	Liver (96-03-A144)	Liver (96-03-A144)					
AR229	Liver (96-04-A138)	Liver (96-04-A138)					
AR230	Liver (97-10-A074B)	Liver (97-10-A074B)					
AR231	Liver (98-09-A242A)	Liver (98-09-A242A)					
AR232	Liver Diabetic (1042)	Liver Diabetic (1042)					
AR233	Liver Diabetic (41616)	Liver Diabetic (41616)					
AR234	Liver Diabetic (41955)	Liver Diabetic (41955)					
AR235	Liver Diabetic (42352R)	Liver Diabetic (42352R)					
AR236	Liver Diabetic (42366)	Liver Diabetic (42366)					
AR237	Liver Diabetic (42483)	Liver Diabetic (42483)					
AR238	Liver Diabetic (42491)	Liver Diabetic (42491)					
AR239	Liver Diabetic (99-09-A281A)	Liver Diabetic (99-09-A281A)					
AR240	Lung	Lung					
AR241	Lung (27270)	Lung (27270)					
AR242	Lung (2727Q)	Lung (2727Q)					
AR243	Lung Cancer (4005116A1)	Lung Cancer (4005116A1)					
AR244	Lung Cancer (4005121A5)	Lung Cancer (4005121A5)					
AR245	Lung Cancer	Lung Cancer (4005121A5))					

AR246	(4005121A5)) Lung Cancer (4005340A4)	Lung Cancer (4005340A4)				
AR247	Mammary Gland	Mammary Gland				
AR248	Monocyte (CT)	Monocyte (CT)				
AR249	Monocyte (OCT)	Monocyte (OCT)				
AR250	Monocytes (CT)	Monocytes (CT)				
AR251	Monocytes (INFG 18 hr)	Monocytes (INFG 18 hr)				
AR252	Monocytes (INFG 18hr)	Monocytes (INFG 18hr)				
AR253	Monocytes (INFG 8-11)	Monocytes (INFG 8-11)				
AR254	Monocytes (O CT)	Monocytes (O CT)				
AR255	Muscle (91-01-A105)	Muscle (91-01-A105)				
AR256	Muscle (92-04-A059)	Muscle (92-04-A059)				
AR257	Muscle (97-11-A056d)	Muscle (97-11-A056d)				
AR258	Muscle (99-06-A210A)	Muscle (99-06-A210A)				
AR259	Muscle (99-07-A203B)	Muscle (99-07-A203B)				
AR260	Muscle (99-7-A203B)	Muscle (99-7-A203B)				
AR261	Muscle Diabetic (42352R)	Muscle Diabetic (42352R)				
AR262	Muscle Diabetic (42366)	Muscle Diabetic (42366)				
AR263	NK-19 Control	NK-19 Control				
AR264	NK-19 IL Treated 72hrs	NK-19 IL Treated 72hrs				
AR265	NK-19 UK Treated 72 hrs.	NK-19 UK Treated 72 hrs.				
AR266	Omentum Normal (94-08-B009)	Omentum Normal (94-08-B009)				
AR267	Omentum Normal (97-01-A039A)	Omentum Normal (97-01-A039A)				
AR268	Omentum Normal (97-04-A114C)	Omentum Normal (97-04-A114C)				
AR269	Omentum Normal (97-06-A117C)	Omentum Normal (97-06-A117C)				
AR270	Omentum Normal (97-09-	Omentum Normal (97-09-				

AR271	B004C)	Ovarian Cancer (17717AID)	B004C)	Ovarian Cancer (17717AID)					
AR272	Ovarian Cancer (9905C023RC)	Ovarian Cancer (9905C023RC)							
AR273	Ovarian Cancer (9905C032RC)	Ovarian Cancer (9905C032RC)							
AR274	Ovary (9508G045)	Ovary (9508G045)							
AR275	Ovary (9701G208)	Ovary (9701G208)							
AR276	Ovary 9806G005	Ovary 9806G005							
AR277	Pancreas	Pancreas							
AR278	Placebo	Placebo							
AR279	rIL2 Control	rIL2 Control							
AR280	RSS288L	RSS288L							
AR281	RSS288LC	RSS288LC							
AR282	Salivary Gland	Salivary Gland							
AR283	Skeletal Muscle	Skeletal Muscle							
AR284	Skeletal Muscle (91-01-A105)	Skeletal Muscle (91-01-A105)							
AR285	Skeletal Muscle (42180)	Skeletal Muscle (42180)							
AR286	Skeletal Muscle (42386)	Skeletal Muscle (42386)							
AR287	Skeletal Muscle (42461)	Skeletal Muscle (42461)							
AR288	Skeletal Muscle (91-01-A105)	Skeletal Muscle (91-01-A105)							
AR289	Skeletal Muscle (92-04-A059)	Skeletal Muscle (92-04-A059)							
AR290	Skeletal Muscle (96-08-A171)	Skeletal Muscle (96-08-A171)							
AR291	Skeletal Muscle (97-07-A190A)	Skeletal Muscle (97-07-A190A)							
AR292	Skeletal Muscle Diabetic (42352)	Skeletal Muscle Diabetic (42352)							
AR293	Skeletal Muscle Diabetic	Skeletal Muscle Diabetic							

AR294	(42366)	(42366)						
	Skeletal Muscle Diabetic (42395)	Skeletal Muscle Diabetic (42395)						
AR295	Skeletal Muscle Diabetic (42483)	Skeletal Muscle Diabetic (42483)						
AR296	Skeletal Muscle Diabetic (42491)	Skeletal Muscle Diabetic (42491)						
AR297	Skeletal Muscle Diabetic 42352	Skeletal Muscle Diabetic 42352						
AR298	Skeletal Muscle (42461)	Skeletal Muscle (42461)						
AR299	Small Intestine	Small Intestine						
AR300	Stomach	Stomach						
AR301	T-Cell + HDPBQ71.fc 1449 16hrs	T-Cell + HDPBQ71.fc 1449 16hrs						
AR302	T-Cell + HDPBQ71.fc 1449 6hrs	T-Cell + HDPBQ71.fc 1449 6hrs						
AR303	T-Cell + IL2 16hrs	T-Cell + IL2 16hrs						
AR304	T-Cell + IL2 6hrs	T-Cell + IL2 6hrs						
AR306	T-Cell Untreated 16hrs	T-Cell Untreated 16hrs						
AR307	T-Cell Untreated 6hrs	T-Cell Untreated 6hrs						
AR308	T-Cells 24 hours	T-Cells 24 hours						
AR309	T-Cells 24 hrs	T-Cells 24 hrs						
AR310	T-Cells 24 hrs.	T-Cells 24 hrs.						
AR311	T-Cells 24hrs	T-Cells 24hrs						
AR312	T-Cells 4 days	T-Cells 4 days						
AR313	Thymus	Thymus						
AR314	TRE	TRE						
AR315	TREC	TREC						
AR317	B lymphocyte, (non-T, non-B)	B lymphocyte, (non-T, non-B)						
AR318								
AR326	001 - 293 RNA (Vector Control)	001 - 293 RNA (Vector Control)						

AR327	001: Control	001: Control							
AR328	001: Control.1	001: Control.1							
AR355	Acute Lymphocyte Leukemia	Acute Lymphocyte Leukemia							
AR356	AML Patient #11	AML Patient #11							
AR357	AML Patient #2	AML Patient #2							
AR358	AML Patient #2 SGAH	AML Patient #2 SGAH							
AR359	AML Patient#2	AML Patient#2							
AR360	Aorta	Aorta							
AR361	B Cell	B Cell							
AR362	B lymphoblast	B lymphoblast							
AR363	B lymphocyte	B lymphocyte							
AR364	B lymphocytes	B lymphocytes							
AR365	B-cell	B-cell							
AR366	B-Cells	B-Cells							
AR367	B-Lymphoblast	B-Lymphoblast							
AR368	B-Lymphocytes	B-Lymphocytes							
AR369	Bladder	Bladder							
AR370	Bone Marrow	Bone Marrow							
AR371	Bronchial Epithelial Cell	Bronchial Epithelial Cell							
AR372	Bronchial Epithelial Cells	Bronchial Epithelial Cells							
AR373	Caco-2A	Caco-2A							
AR374	Caco-2B	Caco-2B							
AR375	Caco-2C	Caco-2C							
AR376	Cardiac #1	Cardiac #1							
AR377	Cardiac #2	Cardiac #2							
AR378	Chest Muscle	Chest Muscle							
AR381	Dendritic Cell	Dendritic Cell							
AR382	Dendritic cells	Dendritic cells							
AR383	E.coli	E.coli							
AR384	Epithelial Cells	Epithelial Cells							
AR385	Esophagus	Esophagus							

AR386	FPPS		FPPS				
AR387	FPPSC		FPPSC				
AR388	HepG2 Cell Line		HepG2 Cell Line				
AR389	HepG2 Cell line Buffer 1 hr.		HepG2 Cell line Buffer 1 hr.				
AR390	HepG2 Cell line Buffer 06 hr		HepG2 Cell line Buffer 06 hr				
AR391	HepG2 Cell line Buffer 24 hr.		HepG2 Cell line Buffer 24 hr.				
AR392	HepG2 Cell line Insulin 01 hr.		HepG2 Cell line Insulin 01 hr.				
AR393	HepG2 Cell line Insulin 06 hr.		HepG2 Cell line Insulin 06 hr.				
AR394	HepG2 Cell line Insulin 24 hr.		HepG2 Cell line Insulin 24 hr.				
AR398	HMC-1		HMC-1				
AR399	HMCS		HMCS				
AR400	HMSC		HMSC				
AR401	HUVEC #3		HUVEC #3				
AR402	HUVEC #4		HUVEC #4				
AR404	KIDNEY NORMAL		KIDNEY NORMAL				
AR405	KIDNEY TUMOR		KIDNEY TUMOR				
AR406	KIDNEY TUMOR						
AR407	Lymph Node		Lymph Node				
AR408	Macrophage		Macrophage				
AR409	Megakarioblast		Megakarioblast				
AR410	Monocyte		Monocyte				
AR411	Monocytes		Monocytes				
AR412	Myocardium		Myocardium				
AR413	Myocardium #3		Myocardium #3				

AR414	Myocardium #4	Myocardium #4					
AR415	Myocardium #5	Myocardium #5					
AR416	NK	NK					
AR417	NK cell	NK cell					
AR418	NK cells	NK cells					
AR419	NKYa	NKYa					
AR420	NKYa019	NKYa019					
AR421	Ovary	Ovary					
AR422	Patient #11	Patient #11					
AR423	Peripheral blood	Peripheral blood					
AR424	Primary Adipocytes	Primary Adipocytes					
AR425	Promyeloblast	Promyeloblast					
AR427	RSSWT	RSSWT					
AR428	RSSWTC	RSSWTC					
AR429	SW 480(G1)	SW 480(G1)					
AR430	SW 480(G2)	SW 480(G2)					
AR431	SW 480(G3)	SW 480(G3)					
AR432	SW 480(G4)	SW 480(G4)					
AR433	SW 480(G5)	SW 480(G5)					
AR434	T Lymphoblast	T Lymphoblast					
AR435	T Lymphocyte	T Lymphocyte					
AR436	T-Cell	T-Cell					
AR438	T-Cell,	T-Cell,					
AR439	T-Cells	T-Cells					
AR440	T-lymphoblast	T-lymphoblast					
AR441	Th 1	Th 1					
AR442	Th 2	Th 2					
AR443	Th1	Th1					
AR444	Th2	Th2					
H0004	Human Adult Spleen	Human Adult Spleen	Spleen				Uni-ZAP XR
H0007	Human Cerebellum	Human Cerebellum	Brain				Uni-ZAP XR
H0008	Whole 6 Week Old						Uni-ZAP XR

	Embryo						
H0009	Human Fetal Brain						Uni-ZAP XR
H0012	Human Fetal Kidney	Human Fetal Kidney	Kidney				Uni-ZAP XR
H0013	Human 8 Week Whole Embryo	Human 8 Week Old Embryo	Embryo				Uni-ZAP XR
H0014	Human Gall Bladder	Human Gall Bladder	Gall Bladder				Uni-ZAP XR
H0015	Human Gall Bladder, fraction II	Human Gall Bladder	Gall Bladder				Uni-ZAP XR
H0024	Human Fetal Lung III	Human Fetal Lung	Lung				Uni-ZAP XR
H0025	Human Adult Lymph Node	Human Adult Lymph Node	Lymph Node				Lambda ZAP II
H0030	Human Placenta						Uni-ZAP XR
H0031	Human Placenta	Human Placenta	Placenta				Uni-ZAP XR
H0032	Human Prostate	Human Prostate	Prostate				Uni-ZAP XR
H0033	Human Pituitary	Human Pituitary					Uni-ZAP XR
H0036	Human Adult Small Intestine	Human Adult Small Intestine	Small Int.				Uni-ZAP XR
H0038	Human Testes	Human Testes	Testis				Uni-ZAP XR
H0039	Human Pancreas Tumor	Human Pancreas Tumor	Pancreas			disease	Uni-ZAP XR
H0040	Human Testes Tumor	Human Testes Tumor	Testis			disease	Uni-ZAP XR
H0041	Human Fetal Bone	Human Fetal Bone	Bone				Uni-ZAP XR
H0042	Human Adult Pulmonary	Human Adult Pulmonary	Lung				Uni-ZAP XR
H0046	Human Endometrial Tumor	Human Endometrial Tumor	Uterus			disease	Uni-ZAP XR
H0050	Human Fetal Heart	Human Fetal Heart	Heart				Uni-ZAP XR
H0051	Human Hippocampus	Human Hippocampus	Brain				Uni-ZAP XR
H0052	Human Cerebellum	Human Cerebellum	Brain				Uni-ZAP XR
H0056	Human Umbilical Vein, Endo. remake	Human Umbilical Vein Endothelial Cells	Umbilical vein				Uni-ZAP XR
H0057	Human Fetal Spleen						Uni-ZAP XR
H0059	Human Uterine Cancer	Human Uterine Cancer	Uterus			disease	Lambda ZAP II
H0063	Human Thymus	Human Thymus	Thymus				Uni-ZAP XR

H0068	Human Skin Tumor	Human Skin Tumor	Human Skin Tumor	Skin			disease	Uni-ZAP XR
H0069	Human Activated T-Cells	Activated T-Cells	Blood		Cell Line			Uni-ZAP XR
H0071	Human Infant Adrenal Gland	Human Infant Adrenal Gland	Adrenal gland					Uni-ZAP XR
H0073	Human Leiomyeloid Carcinoma	Human Leiomyeloid Carcinoma	Muscle				disease	Uni-ZAP XR
H0077	Human Thymus Tumor	Human Thymus Tumor	Thymus				disease	Lambda ZAP II
H0081	Human Fetal Epithelium (Skin)	Human Fetal Skin	Skin					Uni-ZAP XR
H0083	HUMAN JURKAT MEMBRANE BOUND POLYSOMES	Jurkat Cells						Uni-ZAP XR
H0085	Human Colon	Human Colon						Lambda ZAP II
H0087	Human Thymus	Human Thymus						pBluescript
H0090	Human T-Cell Lymphoma	T-Cell Lymphoma	T-Cell				disease	Uni-ZAP XR
H0096	Human Parotid Cancer	Human Parotid Cancer	Parotid				disease	Lambda ZAP II
H0098	Human Adult Liver, subtracted	Human Adult Liver	Liver					Uni-ZAP XR
H0100	Human Whole Six Week Old Embryo	Human Whole Six Week Old Embryo	Embryo					Uni-ZAP XR
H0108	Human Adult Lymph Node, subtracted	Human Adult Lymph Node	Lymph Node					Uni-ZAP XR
H0111	Human Placenta, subtracted	Human Placenta	Placenta					pBluescript
H0112	Human Parathyroid Tumor, subtracted	Human Parathyroid Tumor	Parathyroid					pBluescript
H0122	Human Adult Skeletal Muscle	Human Skeletal Muscle	Sk Muscle					Uni-ZAP XR
H0123	Human Fetal Dura Mater	Human Fetal Dura Mater	Brain					Uni-ZAP XR
H0124	Human Rhabdomyosarcoma	Human Rhabdomyosarcoma	Sk Muscle				disease	Uni-ZAP XR
H0125	Cem cells cyclohexamide treated	Cyclohexamide Treated Cem, Jurkat, Raji, and Supt	Blood		Cell Line			Uni-ZAP XR

H0130	LNCAP untreated	LNCAP Cell Line	Prostate	Cell Line	Uni-ZAP XR
H0131	LNCAP + 0.3nM R1881	LNCAP Cell Line	Prostate	Cell Line	Uni-ZAP XR
H0132	LNCAP + 30nM R1881	LNCAP Cell Line	Prostate	Cell Line	Uni-ZAP XR
H0134	Raji Cells, cyclohexamide treated	Cyclohexamide Treated Cem, Jurkat, Raji, and Supt	Blood	Cell Line	Uni-ZAP XR
H0135	Human Synovial Sarcoma	Human Synovial Sarcoma	Synovium		Uni-ZAP XR
H0136	Supt Cells, cyclohexamide treated	Cyclohexamide Treated Cem, Jurkat, Raji, and Supt	Blood	Cell Line	Uni-ZAP XR
H0139	Activated T-Cells, 4 hrs.	Activated T-Cells	Blood	Cell Line	Uni-ZAP XR
H0140	Activated T-Cells, 8 hrs.	Activated T-Cells	Blood	Cell Line	Uni-ZAP XR
H0141	Activated T-Cells, 12 hrs.	Activated T-Cells	Blood	Cell Line	Uni-ZAP XR
H0144	Nine Week Old Early Stage Human	9 Wk Old Early Stage Human	Embryo		Uni-ZAP XR
H0149	7 Week Old Early Stage Human, subtracted	Human Whole 7 Week Old Embryo	Embryo		Uni-ZAP XR
H0150	Human Epididymus	Epididymis	Testis		Uni-ZAP XR
H0151	Early Stage Human Liver	Human Fetal Liver	Liver		Uni-ZAP XR
H0156	Human Adrenal Gland Tumor	Human Adrenal Gland Tumor	Adrenal Gland	disease	Uni-ZAP XR
H0160	Activated T-Cells, 12 hrs., ligation 2	Activated T-Cells	Blood	Cell Line	Uni-ZAP XR
H0161	Activated T-Cells, 24 hrs., ligation 2	Activated T-Cells	Blood	Cell Line	Uni-ZAP XR
H0163	Human Synovium	Human Synovium	Synovium		Uni-ZAP XR
H0165	Human Prostate Cancer, Stage B2	Human Prostate Cancer, stage B2	Prostate	disease	Uni-ZAP XR
H0166	Human Prostate Cancer, Stage B2 fraction	Human Prostate Cancer, stage B2	Prostate	disease	Uni-ZAP XR
H0169	Human Prostate Cancer, Stage C fraction	Human Prostate Cancer, stage C	Prostate	disease	Uni-ZAP XR
H0170	12 Week Old Early Stage Human	Twelve Week Old Early Stage Human	Embryo		Uni-ZAP XR
H0171	12 Week Old Early Stage	Twelve Week Old Early Stage	Embryo		Uni-ZAP XR

	Human, II	Human				
H0172	Human Fetal Brain, random primed	Human Fetal Brain	Brain			Lambda ZAP II
H0176	CAMA1Ee Cell Line	CAMA1Ee Cell Line	Breast	Cell Line		Uni-ZAP XR
H0178	Human Fetal Brain	Human Fetal Brain	Brain			Uni-ZAP XR
H0179	Human Neutrophil	Human Neutrophil	Blood	Cell Line		Uni-ZAP XR
H0181	Human Primary Breast Cancer	Human Primary Breast Cancer	Breast		disease	Uni-ZAP XR
H0182	Human Primary Breast Cancer	Human Primary Breast Cancer	Breast		disease	Uni-ZAP XR
H0187	Resting T-Cell	T-Cells	Blood	Cell Line		Lambda ZAP II
H0188	Human Normal Breast	Human Normal Breast	Breast			Uni-ZAP XR
H0192	Cem Cells, cyclohexamide treated, subtra	Cyclohexamide Treated Cem, Jurkat, Raji, and Supt	Blood	Cell Line		Uni-ZAP XR
H0194	Human Cerebellum, subtracted	Human Cerebellum	Brain			pBluescript
H0196	Human Cardiomyopathy, subtracted	Human Cardiomyopathy	Heart			Uni-ZAP XR
H0204	Human Colon Cancer, subtracted	Human Colon Cancer	Colon			pBluescript
H0208	Early Stage Human Lung, subtracted	Human Fetal Lung	Lung			pBluescript
H0211	Human Prostate, differential expression	Human Prostate	Prostate			pBluescript
H0212	Human Prostate, subtracted	Human Prostate	Prostate			pBluescript
H0213	Human Pituitary, subtracted	Human Pituitary				Uni-ZAP XR
H0214	Raji cells, cyclohexamide treated, subtracted	Cyclohexamide Treated Cem, Jurkat, Raji, and Supt	Blood	Cell Line		pBluescript
H0218	Activated T-Cells, 0hrs,	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR

	subtracted	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0222	Activated T-Cells, 8 hrs, subtracted	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0224	Activated T-Cells, 12 hrs, subtracted	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0225	Activated T-Cells, 12hrs, differentially expressed	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0231	Human Colon, subtraction	Human Colon				pBluescript
H0233	Human Fetal Heart, Differential (Adult-Specific)	Human Fetal Heart	Heart			pBluescript
H0235	Human colon cancer, metatized to liver, subtraction	Human Colon Cancer, metatized to liver	Liver			pBluescript
H0239	Human Kidney Tumor	Human Kidney Tumor	Kidney		disease	Uni-ZAP XR
H0242	Human Fetal Heart, Differential (Fetal-Specific)	Human Fetal Heart	Heart			pBluescript
H0244	Human 8 Week Whole Embryo, subtracted	Human 8 Week Old Embryo	Embryo			Uni-ZAP XR
H0250	Human Activated Monocytes	Human Monocytes				Uni-ZAP XR
H0251	Human Chondrosarcoma	Human Chondrosarcoma	Cartilage		disease	Uni-ZAP XR
H0252	Human Osteosarcoma	Human Osteosarcoma	Bone		disease	Uni-ZAP XR
H0253	Human adult testis, large inserts	Human Adult Testis	Testis			Uni-ZAP XR
H0254	Breast Lymph node cDNA library	Breast Lymph Node	Lymph Node			Uni-ZAP XR
H0255	breast lymph node CDNA library	Breast Lymph Node	Lymph Node			Lambda ZAP II
H0261	H. cerebellum, Enzyme subtracted	Human Cerebellum	Brain			Uni-ZAP XR
H0263	human colon cancer	Human Colon Cancer	Colon		disease	Lambda ZAP II

H0264	human tonsils	Human Tonsil	Tonsil			Uni-ZAP XR
H0265	Activated T-Cell (12hs)/Thiouridine labelledEco	T-Cells	Blood		Cell Line	Uni-ZAP XR
H0266	Human Microvascular Endothelial Cells, fract. A	HMEC	Vein		Cell Line	Lambda ZAP II
H0267	Human Microvascular Endothelial Cells, fract. B	HMEC	Vein		Cell Line	Lambda ZAP II
H0268	Human Umbilical Vein Endothelial Cells, fract. A	HUVE Cells	Umbilical vein		Cell Line	Lambda ZAP II
H0270	HPAS (human pancreas, subtracted)	Human Pancreas	Pancreas			Uni-ZAP XR
H0271	Human Neutrophil, Activated	Human Neutrophil - Activated	Blood		Cell Line	Uni-ZAP XR
H0272	HUMAN TONSILS, FRACTION 2	Human Tonsil	Tonsil			Uni-ZAP XR
H0275	Human Infant Adrenal Gland, Subtracted	Human Infant Adrenal Gland	Adrenal gland			pBluescript
H0280	K562 + PMA (36 hrs)	K562 Cell line	cell line		Cell Line	ZAP Express
H0284	Human OB MG63 control fraction I	Human Osteoblastoma MG63 cell line	Bone		Cell Line	Uni-ZAP XR
H0286	Human OB MG63 treated (10 nM E2) fraction I	Human Osteoblastoma MG63 cell line	Bone		Cell Line	Uni-ZAP XR
H0288	Human OB HOS control fraction I	Human Osteoblastoma HOS cell line	Bone		Cell Line	Uni-ZAP XR
H0290	Human OB HOS treated (1 nM E2) fraction I	Human Osteoblastoma HOS cell line	Bone		Cell Line	Uni-ZAP XR
H0292	Human OB HOS treated (10 nM E2) fraction I	Human Osteoblastoma HOS cell line	Bone		Cell Line	Uni-ZAP XR
H0294	Amniotic Cells - TNF induced	Amniotic Cells - TNF induced	Placenta		Cell Line	Uni-ZAP XR
H0295	Amniotic Cells - Primary Culture	Amniotic Cells - Primary Culture	Placenta		Cell Line	Uni-ZAP XR

H0298	HCBB's differential consolidation	CAMA1Ee Cell Line	Breast	Cell Line	Uni-ZAP XR
H0305	CD34 positive cells (Cord Blood)	CD34 Positive Cells	Cord Blood		ZAP Express
H0306	CD34 depleted Buffy Coat (Cord Blood)	CD34 Depleted Buffy Coat (Cord Blood)	Cord Blood		ZAP Express
H0309	Human Chronic Synovitis	Synovium, Chronic Synovitis/Osteoarthritis	Synovium	disease	Uni-ZAP XR
H0310	human caudate nucleus	Brain	Brain		Uni-ZAP XR
H0313	human pleural cancer	pleural cancer		disease	pBluescript
H0316	HUMAN STOMACH	Human Stomach	Stomach		Uni-ZAP XR
H0318	HUMAN B CELL LYMPHOMA	Human B Cell Lymphoma	Lymph Node	disease	Uni-ZAP XR
H0320	Human frontal cortex	Human Frontal Cortex	Brain		Uni-ZAP XR
H0327	human corpus colosum	Human Corpus Callosum	Brain		Uni-ZAP XR
H0328	human ovarian cancer	Ovarian Cancer	Ovary	disease	Uni-ZAP XR
H0329	Dermatofibrosarcoma Protuberance	Dermatofibrosarcoma Protuberans	Skin	disease	Uni-ZAP XR
H0331	Hepatocellular Tumor	Hepatocellular Tumor	Liver	disease	Lambda ZAP II
H0333	Hemangiopericytoma	Hemangiopericytoma	Blood vessel	disease	Lambda ZAP II
H0334	Kidney cancer	Kidney Cancer	Kidney	disease	Uni-ZAP XR
H0341	Bone Marrow Cell Line (RS4;11)	Bone Marrow Cell Line RS4;11	Bone Marrow	Cell Line	Uni-ZAP XR
H0343	stomach cancer (human)	Stomach Cancer - 5383A (human)		disease	Uni-ZAP XR
H0346	Brain-medulloblastoma	Brain (Medulloblastoma)-9405C006R	Brain	disease	Uni-ZAP XR
H0350	Human Fetal Liver, mixed 10 & 14 week	Human Fetal Liver, mixed 10&14 Week	Liver		Uni-ZAP XR
H0351	Glioblastoma	Glioblastoma	Brain	disease	Uni-ZAP XR
H0352	wilm's tumor	Wilm's Tumor		disease	Uni-ZAP XR
H0354	Human Leukocytes	Human Leukocytes	Blood	Cell Line	pCMV Sport 1
H0355	Human Liver	Human Liver, normal Adult			pCMV Sport 1

H0356	Human Kidney	Human Kidney	Kidney			pCMV/Sport 1
H0357	H. Normalized Fetal Liver, II	Human Fetal Liver	Liver			Uni-ZAP XR
H0359	KMH2 cell line	KMH2				ZAP Express
H0369	H. Atrophic Endometrium	Atrophic Endometrium and myometrium				Uni-ZAP XR
H0370	H. Lymph node breast Cancer	Lymph node with Met. Breast Cancer			disease	Uni-ZAP XR
H0373	Human Heart	Human Adult Heart	Heart			pCMV/Sport 1
H0375	Human Lung	Human Lung				pCMV/Sport 1
H0380	Human Tongue, frac 2	Human Tongue				pSport1
H0381	Bone Cancer	Bone Cancer			disease	Uni-ZAP XR
H0383	Human Prostate BPH, re-excision	Human Prostate BPH				Uni-ZAP XR
H0384	Brain, Kozak	Human Brain				pCMV/Sport 1
H0386	Leukocyte and Lung; 4 screens	Human Leukocytes	Blood		Cell Line	pCMV/Sport 1
H0390	Human Amygdala Depression, re-excision	Human Amygdala Depression			disease	pBluescript
H0392	H. Meningioma, M1	Human Meningioma	brain			pSport1
H0393	Fetal Liver, subtraction II	Human Fetal Liver	Liver			pBluescript
H0394	A-14 cell line	Redd-Sternberg cell				ZAP Express
H0399	Human Kidney Cortex, re-rescue	Human Kidney Cortex				Lambda ZAP II
H0402	CD34 depleted Buffy Coat (Cord Blood), re-excision	CD34 Depleted Buffy Coat (Cord Blood)	Cord Blood			ZAP Express
H0404	H. Umbilical Vein endothelial cells, uninduced	HUVE Cells	Umbilical vein		Cell Line	Uni-ZAP XR
H0405	Human Pituitary, subtracted VI	Human Pituitary				pBluescript
H0406	H Amygdala Depression,	Human Amygdala Depression				Uni-ZAP XR

	subtracted						
H0408	Human Kidney Cortex, subtracted	Human Kidney Cortex					pBluescript
H0409	H. Striatum Depression, subtracted	Human Brain, Striatum Depression	Brain				pBluescript
H0410	H. Male bladder, adult	H Male Bladder, Adult	Bladder				pSport1
H0411	H Female Bladder, Adult	Human Female Adult Bladder	Bladder				pSport1
H0412	Human umbilical vein endothelial cells, IL-4 induced	HUVE Cells	Umbilical vein	Cell Line			pSport1
H0413	Human Umbilical Vein Endothelial Cells, uninduced	HUVE Cells	Umbilical vein	Cell Line			pSport1
H0415	H. Ovarian Tumor, II, OV5232	Ovarian Tumor, OV5232	Ovary		disease		pCMVSPORT 2.0
H0416	Human Neutrophils, Activated, re-excision	Human Neutrophil - Activated	Blood	Cell Line			pBluescript
H0417	Human Pituitary, subtracted VIII	Human Pituitary					pBluescript
H0418	Human Pituitary, subtracted VII	Human Pituitary					pBluescript
H0421	Human Bone Marrow, re-excision	Bone Marrow					pBluescript
H0422	T-Cell PHA 16 hrs	T-Cells	Blood	Cell Line			pSport1
H0423	T-Cell PHA 24 hrs	T-Cells	Blood	Cell Line			pSport1
H0424	Human Pituitary, sub I	Human Pituitary					pBluescript
H0427	Human Adipose	Human Adipose, left hip lipoma					pSport1
H0428	Human Ovary	Human Ovary Tumor	Ovary				pSport1
H0429	K562 + PMA (36 hrs), re-excision	K562 Cell line	cell line	Cell Line			ZAP Express
H0431	H. Kidney Medulla, re-excision	Kidney medulla	Kidney				pBluescript
H0433	Human Umbilical Vein	HUVE Cells	Umbilical vein	Cell Line			pBluescript

	Endothelial cells, frac B, re-excision						
H0435	Ovarian Tumor 10-3-95	Ovarian Tumor, OV350721	Ovary				pCMVSPORT 2.0
H0436	Resting T-Cell Library, II	T-Cells	Blood		Cell Line		pSport1
H0438	H. Whole Brain #2, re-excision	Human Whole Brain #2					ZAP Express
H0441	H. Kidney Cortex, subtracted	Kidney cortex	Kidney				pBluescript
H0444	Spleen metastatic melanoma	Spleen, Metastatic malignant melanoma	Spleen			disease	pSport1
H0445	Spleen, Chronic lymphocytic leukemia	Human Spleen, CLL	Spleen			disease	pSport1
H0455	H. Striatum Depression, subt	Human Brain, Striatum Depression	Brain				pBluescript
H0457	Human Eosinophils	Human Eosinophils					pSport1
H0458	CD34+ cell, I, frac II	CD34 positive cells					pSport1
H0459	CD34+cells, II, FRACTION 2	CD34 positive cells					pCMVSPORT 2.0
H0461	H. Kidney Medulla, subtracted	Kidney medulla	Kidney				pBluescript
H0478	Salivary Gland, Lib 2	Human Salivary Gland	Salivary gland				pSport1
H0483	Breast Cancer cell line, MDA 36	Breast Cancer Cell line, MDA 36					pSport1
H0484	Breast Cancer Cell line, angiogenic	Breast Cancer Cell line, Angiogenic, 36T3					pSport1
H0485	Hodgkin's Lymphoma I	Hodgkin's Lymphoma I				disease	pCMVSPORT 2.0
H0486	Hodgkin's Lymphoma II	Hodgkin's Lymphoma II				disease	pCMVSPORT 2.0
H0488	Human Tonsils, Lib 2	Human Tonsils					pCMVSPORT 2.0
H0492	HL-60, RA 4h, Subtracted	HL-60 Cells, RA stimulated for 4h	Blood		Cell Line		Uni-ZAP XR
H0494	Keratinocyte	Keratinocyte					pCMVSPORT 2.0
H0497	HEL cell line	HEL cell line			HEL 92.1.7		pSport1
H0505	Human Astrocyte	Human Astrocyte					pSport1

H0506	Ulcerative Colitis	Colon	Colon			pSport1
H0509	Liver, Hepatoma	Human Liver, Hepatoma, patient 8	Liver		disease	pCMV Sport 3.0
H0510	Human Liver, normal	Human Liver, normal, Patient # 8	Liver			pCMV Sport 3.0
H0518	pBMC stimulated w/ poly I/C	pBMC stimulated with poly I/C				pCMV Sport 3.0
H0519	NTERA2, control	NTERA2, Teratocarcinoma cell line				pCMV Sport 3.0
H0520	NTERA2 + retinoic acid, 14 days	NTERA2, Teratocarcinoma cell line				pSport1
H0521	Primary Dendritic Cells, lib 1	Primary Dendritic cells				pCMV Sport 3.0
H0522	Primary Dendritic cells, frac 2	Primary Dendritic cells				pCMV Sport 3.0
H0525	PCR, pBMC I/C treated	pBMC stimulated with poly I/C				PCR II
H0529	Myeloid Progenitor Cell Line	TF-1 Cell Line; Myeloid progenitor cell line				pCMV Sport 3.0
H0530	Human Dermal Endothelial Cells, untreated	Human Dermal Endothelial Cells; untreated				pSport1
H0537	H. Primary Dendritic Cells, lib 3	Primary Dendritic cells				pCMV Sport 2.0
H0538	Merkel Cells	Merkel cells	Lymph node			pSport1
H0539	Pancreas Islet Cell Tumor	Pancreas Islet Cell Tumour	Pancreas		disease	pSport1
H0542	T Cell helper I	Helper T cell				pCMV Sport 3.0
H0543	T cell helper II	Helper T cell				pCMV Sport 3.0
H0544	Human endometrial stromal cells	Human endometrial stromal cells				pCMV Sport 3.0
H0545	Human endometrial stromal cells-treated with progesterone	Human endometrial stromal cells-treated with proge				pCMV Sport 3.0
H0546	Human endometrial	Human endometrial stromal				pCMV Sport 3.0

	stromal cells-treated with estradiol	cells-treated with estradiol				
H0547	NTERA2 teratocarcinoma cell line+retinoic acid (14 days)	NTERA2, Teratocarcinoma cell line				pSport1
H0549	H. Epididymus, caput & corpus	Human Epididymus, caput and corpus				Uni-ZAP XR
H0550	H. Epididymus, cauda	Human Epididymus, cauda				Uni-ZAP XR
H0551	Human Thymus Stromal Cells	Human Thymus Stromal Cells				pCMVSPORT 3.0
H0553	Human Placenta	Human Placenta				pCMVSPORT 3.0
H0555	Rejected Kidney, lib 4	Human Rejected Kidney	Kidney		disease	pCMVSPORT 3.0
H0556	Activated T-cell(12h)/Thiouridine-re-excision	T-Cells	Blood		Cell Line	Uni-ZAP XR
H0559	HL-60, PMA 4H, re-excision	HL-60 Cells, PMA stimulated 4H	Blood		Cell Line	Uni-ZAP XR
H0560	KMH2	KMH2				pCMVSPORT 3.0
H0561	L428	L428				pCMVSPORT 3.0
H0563	Human Fetal Brain, normalized 50021F	Human Fetal Brain				pCMVSPORT 2.0
H0564	Human Fetal Brain, normalized C5001F	Human Fetal Brain				pCMVSPORT 2.0
H0566	Human Fetal Brain, normalized c50F	Human Fetal Brain				pCMVSPORT 2.0
H0567	Human Fetal Brain, normalized A5002F	Human Fetal Brain				pCMVSPORT 2.0
H0569	Human Fetal Brain, normalized CO	Human Fetal Brain				pCMVSPORT 2.0
H0570	Human Fetal Brain, normalized C500H	Human Fetal Brain				pCMVSPORT 2.0
H0571	Human Fetal Brain, normalized C500HE	Human Fetal Brain				pCMVSPORT 2.0

H0572	Human Fetal Brain, normalized AC5002	Human Fetal Brain				pCMVSPORT 2.0
H0574	Hepatocellular Tumor; re-excision	Hepatocellular Tumor	Liver		disease	Lambda ZAP II
H0575	Human Adult Pulmonary re-excision	Human Adult Pulmonary	Lung			Uni-ZAP XR
H0576	Resting T-Cell; re-excision	T-Cells	Blood	Cell Line		Lambda ZAP II
H0578	Human Fetal Thymus	Fetal Thymus	Thymus			pSport1
H0580	Dendritic cells, pooled	Pooled dendritic cells				pCMVSPORT 3.0
H0581	Human Bone Marrow, treated	Human Bone Marrow	Bone Marrow			pCMVSPORT 3.0
H0583	B Cell lymphoma	B Cell Lymphoma	B Cell		disease	pCMVSPORT 3.0
H0585	Activated T-Cells, 12 hrs, re-excision	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0586	Healing groin wound, 6.5 hours post incision	healing groin wound, 6.5 hours post incision - 2/	groin		disease	pCMVSPORT 3.0
H0587	Healing groin wound; 7.5 hours post incision	Groin-2/19/97	groin		disease	pCMVSPORT 3.0
H0589	CD34 positive cells (cord blood), re-ex	CD34 Positive Cells	Cord Blood			ZAP Express
H0590	Human adult small intestine, re-excision	Human Adult Small Intestine	Small Int.			Uni-ZAP XR
H0591	Human T-cell lymphoma, re-excision	T-Cell Lymphoma	T-Cell		disease	Uni-ZAP XR
H0592	Healing groin wound - zero hr post-incision (control)	HGS wound healing project; abdomen			disease	pCMVSPORT 3.0
H0593	Olfactory epithelium; nasal cavity	Olfactory epithelium from roof of left nasal cavity				pCMVSPORT 3.0
H0594	Human Lung Cancer; re-excision	Human Lung Cancer	Lung		disease	Lambda ZAP II
H0595	Stomach cancer	Stomach Cancer - 5383A			disease	Uni-ZAP XR

	(human);re-excision	(human)				
H0596	Human Colon Cancer;re-excision	Human Colon Cancer	Colon			Lambda ZAP II
H0597	Human Colon; re-excision	Human Colon				Lambda ZAP II
H0598	Human Stomach;re-excision	Human Stomach	Stomach			Uni-ZAP XR
H0599	Human Adult Heart;re-excision	Human Adult Heart	Heart			Uni-ZAP XR
H0600	Healing Abdomen wound;70&90 min post incision	Abdomen		disease		pCMV/Sport 3.0
H0601	Healing Abdomen Wound;15 days post incision	Abdomen		disease		pCMV/Sport 3.0
H0602	Healing Abdomen Wound;21&29 days post incision	Abdomen		disease		pCMV/Sport 3.0
H0604	Human Pituitary, re-excision	Human Pituitary				pBluescript
H0606	Human Primary Breast Cancer;re-excision	Human Primary Breast Cancer	Breast	disease		Uni-ZAP XR
H0613	H.Leukocytes, normalized cot 5B	H.Leukocytes				pCMV/Sport 1
H0614	H. Leukocytes, normalized cot 500 A	H.Leukocytes				pCMV/Sport 1
H0615	Human Ovarian Cancer Reexcision	Ovarian Cancer	Ovary	disease		Uni-ZAP XR
H0616	Human Testes, Reexcision	Human Testes	Testis			Uni-ZAP XR
H0617	Human Primary Breast Cancer Reexcision	Human Primary Breast Cancer	Breast	disease		Uni-ZAP XR
H0618	Human Adult Testes, Large Inserts, Reexcision	Human Adult Testis	Testis			Uni-ZAP XR
H0619	Fetal Heart	Human Fetal Heart	Heart			Uni-ZAP XR

H0620	Human Fetal Kidney; Reexcision	Human Fetal Kidney	Kidney			Uni-ZAP XR
H0622	Human Pancreas Tumor; Reexcision	Human Pancreas Tumor	Pancreas		disease	Uni-ZAP XR
H0623	Human Umbilical Vein; Reexcision	Human Umbilical Vein Endothelial Cells	Umbilical vein			Uni-ZAP XR
H0624	12 Week Early Stage Human II; Reexcision	Twelve Week Old Early Stage Human	Embryo			Uni-ZAP XR
H0625	Ku 812F Basophils Line	Ku 812F Basophils				pSport1
H0626	Saos2 Cells; Untreated	Saos2 Cell Line; Untreated				pSport1
H0627	Saos2 Cells; Vitamin D3 Treated	Saos2 Cell Line; Vitamin D3 Treated				pSport1
H0628	Human Pre-Differentiated Adipocytes	Human Pre-Differentiated Adipocytes				Uni-ZAP XR
H0631	Saos2, Dexamethosome Treated	Saos2 Cell Line; Dexamethosome Treated				pSport1
H0632	Hepatocellular Tumor; re-excision	Hepatocellular Tumor	Liver			Lambda ZAP II
H0633	Lung Carcinoma A549 TNFalpha activated	TNFalpha activated A549-- Lung Carcinoma			disease	pSport1
H0634	Human Testes Tumor, re-excision	Human Testes Tumor	Testis		disease	Uni-ZAP XR
H0635	Human Activated T-Cells, re-excision	Activated T-Cells	Blood	Cell Line		Uni-ZAP XR
H0637	Dendritic Cells From CD34 Cells	Dendritic cells from CD34 cells				pSport1
H0638	CD40 activated monocyte dendritic cells	CD40 activated monocyte dendritic cells				pSport1
H0640	Ficoll Human Stromal Cells, Untreated	Ficoll Human Stromal Cells, Untreated				Other
H0641	LPS activated derived dendritic cells	LPS activated monocyte derived dendritic cells				pSport1
H0642	Hep G2 Cells, lambda	Hep G2 Cells				Other

H0643	library Hep G2 Cells, PCR library	Hep G2 Cells					Other
H0644	Human Placenta (re- excision)	Human Placenta	Placenta				Uni-ZAP XR
H0645	Fetal Heart, re-excision	Human Fetal Heart	Heart				Uni-ZAP XR
H0646	Lung, Cancer (4005313 A3): Invasive Poorly Differentiated Lung Adenocarcinoma,	Metastatic squamous cell lung carcinoma, poorly di					pSport1
H0647	Lung, Cancer (4005163 B7): Invasive, Poorly Diff. Adenocarcinoma, Metastatic	Invasive poorly differentiated lung adenocarcinoma			disease		pSport1
H0648	Ovary, Cancer: (4004562 B6) Papillary Serous Cystic Neoplasm, Low Malignant Pot	Papillary Cstic neoplasm of low malignant potentia			disease		pSport1
H0649	Lung, Normal: (4005313 B1)	Normal Lung					pSport1
H0650	B-Cells	B-Cells					pCMVSPORT 3.0
H0651	Ovary, Normal: (9805C040R)	Normal Ovary					pSport1
H0652	Lung, Normal: (4005313 B1)	Normal Lung					pSport1
H0653	Stromal Cells	Stromal Cells					pSport1
H0656	B-cells (unstimulated)	B-cells (unstimulated)					pSport1
H0657	B-cells (stimulated)	B-cells (stimulated)					pSport1
H0658	Ovary, Cancer (9809C332): Poorly differentiated adenocarcinoma	9809C332- Poorly differentiate	Ovary & Fallopian Tubes		disease		pSport1
H0659	Ovary, Cancer	Grade II Papillary Carcinoma,	Ovary		disease		pSport1

	(15395A1F): Grade II Papillary Carcinoma	Ovary				
H0660	Ovary, Cancer: (15799A1F) Poorly differentiated carcinoma	Poorly differentiated carcinoma, ovary			disease	pSport1
H0661	Breast, Cancer: (4004943 A5)	Breast cancer			disease	pSport1
H0662	Breast, Normal: (4005522B2)	Normal Breast - #4005522(B2)	Breast			pSport1
H0663	Breast, Cancer: (4005522 A2)	Breast Cancer - #4005522(A2)	Breast		disease	pSport1
H0664	Breast, Cancer: (9806C012R)	Breast Cancer	Breast		disease	pSport1
H0665	Stromal cells 3.88	Stromal cells 3.88				pSport1
H0666	Ovary, Cancer: (4004332 A2)	Ovarian Cancer, Sample #4004332A2			disease	pSport1
H0667	Stromal cells(HBM3.18)	Stromal cell(HBM 3.18)				pSport1
H0668	stromal cell clone 2.5	stromal cell clone 2.5				pSport1
H0670	Ovary, Cancer(4004650 A3): Well-Differentiated Micropapillary Serous Carcinoma	Ovarian Cancer - 4004650A3				pSport1
H0672	Ovary, Cancer: (4004576 A8)	Ovarian Cancer(4004576A8)	Ovary			pSport1
H0673	Human Prostate Cancer, Stage B2; re-excision	Human Prostate Cancer, stage B2	Prostate			Uni-ZAP XR
H0674	Human Prostate Cancer, Stage C; re-excision	Human Prostate Cancer, stage C	Prostate			Uni-ZAP XR
H0675	Colon, Cancer: (9808C064R)	Colon Cancer 9808C064R				pCMVSPORT 3.0
H0677	TNFR degenerate oligo	B-Cells				PCRII
H0678	screened clones from placental library	Placenta	Placenta			Other

H0682	Serous Papillary Adenocarcinoma	serous papillary adenocarcinoma (9606G304SPA3B)				pCMV Sport 3.0
H0683	Ovarian Serous Papillary Adenocarcinoma	Serous papillary adenocarcinoma, stage 3C (9804G01)				pCMV Sport 3.0
H0684	Serous Papillary Adenocarcinoma	Ovarian Cancer-9810G606	Ovaries			pCMV Sport 3.0
H0685	Adenocarcinoma of Ovary, Human Cell Line, # OVCAR-3	Adenocarcinoma of Ovary, Human Cell Line, # OVCAR-3				pCMV Sport 3.0
H0686	Adenocarcinoma of Ovary, Human Cell Line	Adenocarcinoma of Ovary, Human Cell Line, # SW-626				pCMV Sport 3.0
H0687	Human normal ovary (#9610G215)	Human normal ovary (#9610G215)	Ovary			pCMV Sport 3.0
H0688	Human Ovarian Cancer (#9807G017)	Human Ovarian cancer (#9807G017), mRNA from Maura Ru				pCMV Sport 3.0
H0689	Ovarian Cancer	Ovarian Cancer, #9806G019				pCMV Sport 3.0
H0690	Ovarian Cancer, #9702G001	Ovarian Cancer, #9702G001				pCMV Sport 3.0
H0691	Normal Ovary, #9710G208	normal ovary, #9710G208				pCMV Sport 3.0
H0693	Normal Prostate #ODQ3958EN	Normal Prostate Tissue # ODQ3958EN				pCMV Sport 3.0
H0694	Prostate gland adenocarcinoma	Prostate gland, adenocarcinoma, mod/diff, gleason	prostate gland			pCMV Sport 3.0
H0695	mononucleocytes from patient	mononucleocytes from patient at Shady Grove Hospit				pCMV Sport 3.0
N0009	Human Hippocampus, prescreened	Human Hippocampus				
S0001	Brain frontal cortex	Brain frontal cortex	Brain			Lambda ZAP II

S0002	Monocyte activated	Monocyte-activated	blood	Cell Line		Uni-ZAP XR
S0003	Human Osteoclastoma	Osteoclastoma	bone		disease	Uni-ZAP XR
S0004	Prostate	Prostate BPH	Prostate			Lambda ZAP II
S0006	Neuroblastoma	Human Neural Blastoma			disease	pCDNA
S0007	Early Stage Human Brain	Human Fetal Brain				Uni-ZAP XR
S0010	Human Amygdala	Amygdala				Uni-ZAP XR
S0011	STROMAL - OSTEOCLASTOMA	Osteoclastoma	bone		disease	Uni-ZAP XR
S0013	Prostate	Prostate	prostate			Uni-ZAP XR
S0014	Kidney Cortex	Kidney cortex	Kidney			Uni-ZAP XR
S0015	Kidney medulla	Kidney medulla	Kidney			Uni-ZAP XR
S0016	Kidney Pyramids	Kidney pyramids	Kidney			Uni-ZAP XR
S0022	Human Osteoclastoma Stromal Cells - unamplified	Osteoclastoma Stromal Cells				Uni-ZAP XR
S0024	Human Kidney Medulla - unamplified	Human Kidney Medulla				
S0026	Stromal cell TF274	stromal cell	Bone marrow	Cell Line		Uni-ZAP XR
S0027	Smooth muscle, serum treated	Smooth muscle	Pulmonary artery	Cell Line		Uni-ZAP XR
S0028	Smooth muscle, control	Smooth muscle	Pulmonary artery	Cell Line		Uni-ZAP XR
S0029	brain stem	Brain stem	brain			Uni-ZAP XR
S0031	Spinal cord	Spinal cord	spinal cord			Uni-ZAP XR
S0032	Smooth muscle-ILb induced	Smooth muscle	Pulmonary artery	Cell Line		Uni-ZAP XR
S0036	Human Substantia Nigra	Human Substantia Nigra				Uni-ZAP XR
S0037	Smooth muscle, IL1b induced	Smooth muscle	Pulmonary artery	Cell Line		Uni-ZAP XR
S0038	Human Whole Brain #2 - Oligo dT > 1.5Kb	Human Whole Brain #2				ZAP Express
S0039	Hypothalamus	Hypothalamus	Brain			Uni-ZAP XR
S0040	Adipocytes	Human Adipocytes from Osteoclastoma				Uni-ZAP XR

S0044	Prostate BPH	prostate BPH	Prostate				Uni-ZAP XR
S0045	Endothelial cells-control	Endothelial cell	endothelial cell-lung	Cell Line			Uni-ZAP XR
S0046	Endothelial-induced	Endothelial cell	endothelial cell-lung	Cell Line			Uni-ZAP XR
S0048	Human Hypothalamus, Alzheimer's	Human Hypothalamus, Alzheimer's			disease		Uni-ZAP XR
S0049	Human Brain, Striatum	Human Brain, Striatum					Uni-ZAP XR
S0050	Human Frontal Cortex, Schizophrenia	Human Frontal Cortex, Schizophrenia			disease		Uni-ZAP XR
S0051	Human Hypothalamus, Schizophrenia	Human Hypothalamus, Schizophrenia			disease		Uni-ZAP XR
S0052	neutrophils control	human neutrophils	blood	Cell Line			Uni-ZAP XR
S0053	Neutrophils IL-1 and LPS induced	human neutrophil induced	blood	Cell Line			Uni-ZAP XR
S0106	STRIATUM DEPRESSION		BRAIN		disease		Uni-ZAP XR
S0110	Brain Amygdala Depression		Brain		disease		Uni-ZAP XR
S0112	Hypothalamus		Brain				Uni-ZAP XR
S0114	Anergic T-cell	Anergic T-cell		Cell Line			Uni-ZAP XR
S0116	Bone marrow	Bone marrow	Bone marrow				Uni-ZAP XR
S0124	Smooth muscle-edited A	Smooth muscle	Pulmonary artery	Cell Line			Uni-ZAP XR
S0126	Osteoblasts	Osteoblasts	Knee	Cell Line			Uni-ZAP XR
S0132	Epithelial-TNF α and INF induced	Airway Epithelial					Uni-ZAP XR
S0134	Apoptotic T-cell	apoptotic cells		Cell Line			Uni-ZAP XR
S0136	PERM TF274	stromal cell	Bone marrow	Cell Line			Lambda ZAP II
S0140	eosinophil-IL5 induced	eosinophil	lung	Cell Line			Uni-ZAP XR
S0142	Macrophage-oxLDL	macrophage-oxidized LDL treated	blood	Cell Line			Uni-ZAP XR
S0144	Macrophage (GM-CSF	Macrophage (GM-CSF treated)					Uni-ZAP XR

	treated)						
S0146	prostate-edited	prostate BPH	Prostate				Uni-ZAP XR
S0148	Normal Prostate	Prostate	prostate				Uni-ZAP XR
S0150	LNCAP prostate cell line	LNCAP Cell Line	Prostate	Cell Line			Uni-ZAP XR
S0152	PC3 Prostate cell line	PC3 prostate cell line					Uni-ZAP XR
S0190	Prostate BPH Lib 2, subtracted	Human Prostate BPH					pSport1
S0192	Synovial Fibroblasts (control)	Synovial Fibroblasts					pSport1
S0194	Synovial hypoxia	Synovial Fibroblasts					pSport1
S0196	Synovial IL-1/TNF stimulated	Synovial Fibroblasts					pSport1
S0206	Smooth Muscle- HASTE normalized	Smooth muscle	Pulmonary artery	Cell Line			pBluescript
S0210	Mesangial cell, frac 2	Mesangial cell					pSport1
S0212	Bone Marrow Stromal Cell, untreated	Bone Marrow Stromal Cell, untreated					pSport1
S0214	Human Osteoclastoma, re-excision	Osteoclastoma	bone		disease		Uni-ZAP XR
S0216	Neutrophils IL-1 and LPS induced	human neutrophil induced	blood	Cell Line			Uni-ZAP XR
S0218	Apoptotic T-cell, re-excision	apoptotic cells		Cell Line			Uni-ZAP XR
S0220	H. hypothalamus, frac A; re-excision	Hypothalamus	Brain				ZAP Express
S0222	H. Frontal cortex; epileptic; re-excision	H. Brain, Frontal Cortex, Epileptic	Brain		disease		Uni-ZAP XR
S0242	Synovial Fibroblasts (II/TNF), sub	Synovial Fibroblasts					pSport1
S0250	Human Osteoblasts II	Human Osteoblasts	Femur		disease		pCMV Sport 2.0
S0260	Spinal Cord, re-excision	Spinal cord	spinal cord				Uni-ZAP XR
S0276	Synovial hypoxia-RSF	Synovial fibroblasts	Synovial tissue				pSport1

	subtracted	(rheumatoid)				
S0278	H Macrophage (GM-CSF treated), re-excision	Macrophage (GM-CSF treated)				Uni-ZAP XR
S0280	Human Adipose Tissue, re-excision	Human Adipose Tissue				Uni-ZAP XR
S0282	Brain Frontal Cortex, re-excision	Brain frontal cortex	Brain			Lambda ZAP II
S0294	Larynx tumor	Larynx tumor	Larynx, vocal cord		disease	pSport1
S0298	Bone marrow stroma, treated	Bone marrow stroma, treated SB	Bone marrow			pSport1
S0300	Frontal lobe, dementia; re-excision	Frontal Lobe dementia/Alzheimer's	Brain			Uni-ZAP XR
S0312	Human osteoarthritic; fraction II	Human osteoarthritic cartilage			disease	pSport1
S0314	Human osteoarthritic; fraction I	Human osteoarthritic cartilage			disease	pSport1
S0328	Palate carcinoma	Palate carcinoma	Uvula		disease	pSport1
S0330	Palate normal	Palate normal	Uvula			pSport1
S0332	Pharynx carcinoma	Pharynx carcinoma	Hypopharynx			pSport1
S0334	Human Normal Cartilage Fraction III	Human Normal Cartilage				pSport1
S0336	Human Normal Cartilage Fraction IV	Human Normal Cartilage				pSport1
S0338	Human Osteoarthritic Cartilage Fraction III	Human osteoarthritic cartilage			disease	pSport1
S0342	Adipocytes; re-excision	Human Adipocytes from Osteoclastoma				Uni-ZAP XR
S0344	Macrophage-oxLDL; re-excision	macrophage-oxidized LDL treated	blood	Cell Line		Uni-ZAP XR
S0346	Human Amygdala; re-excision	Amygdala				Uni-ZAP XR
S0350	Pharynx Carcinoma	Pharynx carcinoma	Hypopharynx		disease	pSport1

S0354	Colon Normal II	Colon Normal	Colon			pSport1
S0356	Colon Carcinoma	Colon Carcinoma	Colon		disease	pSport1
S0358	Colon Normal III	Colon Normal	Colon			pSport1
S0360	Colon Tumor II	Colon Tumor	Colon		disease	pSport1
S0364	Human Quadriceps	Quadriceps muscle				pSport1
S0366	Human Soleus	Soleus Muscle				pSport1
S0368	Human Pancreatic Langerhans	Islets of Langerhans				pSport1
S0372	Larynx carcinoma III	Larynx carcinoma			disease	pSport1
S0374	Normal colon	Normal colon				pSport1
S0376	Colon Tumor	Colon Tumor			disease	pSport1
S0378	Pancreas normal PCA4 No	Pancreas Normal PCA4 No				pSport1
S0380	Pancreas Tumor PCA4 Tu	Pancreas Tumor PCA4 Tu			disease	pSport1
S0386	Human Whole Brain, re-excision	Whole brain	Brain			ZAP Express
S0388	Human Hypothalamus, schizophrenia, re-excision	Human Hypothalamus, Schizophrenia			disease	Uni-ZAP XR
S0390	Smooth muscle, control; re-excision	Smooth muscle	Pulmonary artery	Cell Line		Uni-ZAP XR
S0392	Salivary Gland	Salivary gland; normal				pSport1
S0394	Stomach; normal	Stomach; normal				pSport1
S0398	Testis; normal	Testis; normal				pSport1
S0404	Rectum normal	Rectum, normal				pSport1
S0406	Rectum tumour	Rectum tumour				pSport1
S0408	Colon, normal	Colon, normal				pSport1
S0410	Colon, tumour	Colon, tumour				pSport1
S0412	Temporal cortex-Alzheimer; subtracted	Temporal cortex, Alzheimer			disease	Other
S0414	Hippocampus, Alzheimer Subtracted	Hippocampus, Alzheimer Subtracted				Other

S0418	CHME Cell Line; treated 5 hrs	CHME Cell Line; treated					pCMV Sport 3.0
S0420	CHME Cell Line, untreated	CHME Cell line, untreated					pSport1
S0422	Mo7e Cell Line GM-CSF treated (1ng/ml)	Mo7e Cell Line GM-CSF treated (1ng/ml)					pCMV Sport 3.0
S0424	TF-1 Cell Line GM-CSF Treated	TF-1 Cell Line GM-CSF Treated					pSport1
S0426	Monocyte activated; re-excision	Monocyte-activated	blood		Cell Line		Uni-ZAP XR
S0428	Neutrophils control; re-excision	human neutrophils	blood		Cell Line		Uni-ZAP XR
S0430	Aryepiglottis Normal	Aryepiglottis Normal					pSport1
S0432	Sinus piniformis Tumour	Sinus piniformis Tumour					pSport1
S0434	Stomach Normal	Stomach Normal				disease	pSport1
S0436	Stomach Tumour	Stomach Tumour				disease	pSport1
S0438	Liver Normal Met5No	Liver Normal Met5No					pSport1
S0440	Liver Tumour Met 5 Tu	Liver Tumour					pSport1
S0442	Colon Normal	Colon Normal					pSport1
S0444	Colon Tumour	Colon Tumour				disease	pSport1
S0446	Tongue Tumour	Tongue Tumour					pSport1
S0448	Larynx Normal	Larynx Normal					pSport1
S0450	Larynx Tumour	Larynx Tumour					pSport1
S0452	Thymus	Thymus					pSport1
S0454	Placenta	Placenta	Placenta				pSport1
S0456	Tongue Normal	Tongue Normal					pSport1
S0458	Thyroid Normal (SDCA2 No)	Thyroid normal					pSport1
S0460	Thyroid Tumour	Thyroid Tumour					pSport1
S0462	Thyroid Thyroiditis	Thyroid Thyroiditis					pSport1
S0470	Adenocarcinoma	PYFD				disease	pSport1
S0474	Human blood platelets	Platelets	Blood platelets				Other

S0665	Human Amygdala; re-excision	Amygdala				Uni-ZAP XR
S3012	Smooth Muscle Serum Treated, Norm	Smooth muscle	Pulmonary artery	Cell Line		pBluescript
S3014	Smooth muscle, serum induced, re-exc	Smooth muscle	Pulmonary artery	Cell Line		pBluescript
S6014	H. hypothalamus, frac A	Hypothalamus	Brain			ZAP Express
S6022	H. Adipose Tissue	Human Adipose Tissue				Uni-ZAP XR
S6024	Alzheimers, spongy change	Alzheimer's/Spongy change	Brain		disease	Uni-ZAP XR
S6026	Frontal Lobe, Dementia	Frontal Lobe	Brain			Uni-ZAP XR
S6028	Human Manic Depression Tissue	dementia/Alzheimer's Human Manic depression tissue	Brain		disease	Uni-ZAP XR
T0002	Activated T-cells	Activated T-Cell, PBL fraction	Blood	Cell Line		pBluescript SK-
T0004	Human White Fat	Human White Fat				pBluescript SK-
T0006	Human Pineal Gland	Human Pineal Gland				pBluescript SK-
T0010	Human Infant Brain	Human Infant Brain				Other
T0040	HSC172 cells	SA172 Cells				pBluescript SK-
T0041	Jurkat T-cell G1 phase	Jurkat T-cell				pBluescript SK-
T0042	Jurkat T-Cell, S phase	Jurkat T-Cell Line				pBluescript SK-
T0048	Human Aortic Endothelium	Human Aortic Endothelium				pBluescript SK-
T0049	Aorta endothelial cells + TNF-a	Aorta endothelial cells				pBluescript SK-
T0060	Human White Adipose	Human White Fat				pBluescript SK-
T0067	Human Thyroid	Human Thyroid				pBluescript SK-
T0068	Normal Ovary, Premenopausal	Normal Ovary, Premenopausal				pBluescript SK-
T0069	Human Uterus, normal	Human Uterus, normal				pBluescript SK-
T0071	Human Bone Marrow	Human Bone Marrow				pBluescript SK-
T0082	Human Adult Retina	Human Adult Retina				pBluescript SK-
T0103	Human colon carcinoma					pBluescript SK-

	(HCC) cell line						
T0104	HCC cell line metastasis to liver						pBluescript SK-
T0109	Human (HCC) cell line liver (mouse) metastasis, remake						pBluescript SK-
T0110	Human colon carcinoma (HCC) cell line, remake						pBluescript SK-
T0114	Human (Caco-2) cell line, adenocarcinoma, colon, remake						pBluescript SK-
T0115	Human Colon Carcinoma (HCC) cell line						pBluescript SK-
L0005	Clontech human aorta polyA+ mRNA (#6572)						
L0018	Human (M.Lovett)						
L0021	Human adult (K.Okubo)						
L0022	Human adult lung 3" directed Mbol cDNA						
L0040	Human colon mucosa						
L0041	Human epidermal keratinocyte						
L0045	Human keratinocyte differential display (B.Lin)						
L0053	Human pancreatic tumor						
L0055	Human promyelocyte						
L0060	Human thymus NSTH II						
L0065	Liver HepG2 cell line.						
L0070	Selected chromosome 21 cDNA library						
L0105	Human aorta polyA+ (TFujiwara)				aorta		

L0142	Human placenta cDNA (TFujiwara)	placenta				
L0157	Human fetal brain (TFujiwara)		brain			
L0163	Human heart cDNA (YNakamura)		heart			
L0183	Human HeLa cells (M.Lovett)			HeLa		
L0194	Human pancreatic cancer cell line Patu 8988t	pancreatic cancer		Patu 8988t		
L0351	Infant brain, Bento Soares					BA, M13-derived
L0352	Normalized infant brain, Bento Soares					BA, M13-derived
L0355	P, Human foetal Brain Whole tissue					Bluescript
L0356	S, Human foetal Adrenals tissue					Bluescript
L0361	Stratagene ovary (#937217)		ovary			Bluescript SK
L0362	Stratagene ovarian cancer (#937219)					Bluescript SK-
L0363	NCI CGAP GC2	germ cell tumor				Bluescript SK-
L0364	NCI CGAP GC5	germ cell tumor				Bluescript SK-
L0366	Stratagene schizo brain S11	schizophrenic brain S-11 frontal lobe				Bluescript SK-
L0367	NCI CGAP Sch1	Schwannoma tumor				Bluescript SK-
L0369	NCI CGAP AA1	adrenal adenoma	adrenal gland			Bluescript SK-
L0370	Johnston frontal cortex	pooled frontal lobe	brain			Bluescript SK-
L0371	NCI CGAP Br3	breast tumor	breast			Bluescript SK-
L0372	NCI CGAP Co12	colon tumor	colon			Bluescript SK-
L0373	NCI CGAP Co11	tumor	colon			Bluescript SK-
L0374	NCI CGAP Co2	tumor	colon			Bluescript SK-
L0375	NCI CGAP Kid6	kidney tumor	kidney			Bluescript SK-

L0376	NCL_CGAP_Lar1	larynx	larynx			Bluescript SK-
L0378	NCL_CGAP_Lu1	lung tumor	lung			Bluescript SK-
L0381	NCL_CGAP_HN4	squamous cell carcinoma	pharynx			Bluescript SK-
L0382	NCL_CGAP_Pr25	epithelium (cell line)	prostate			Bluescript SK-
L0383	NCL_CGAP_Pr24	invasive tumor (cell line)	prostate			Bluescript SK-
L0384	NCL_CGAP_Pr23	prostate tumor	prostate			Bluescript SK-
L0386	NCL_CGAP_HN3	squamous cell carcinoma from base of tongue	tongue			Bluescript SK-
L0387	NCL_CGAP_GCB0	germinal center B-cells	tonsil			Bluescript SK-
L0388	NCL_CGAP_HN6	normal gingiva (cell line from immortalized kerati				Bluescript SK-
L0411	1-NIB					Lafmid BA
L0415	b4HB3MA Cot8-HAP-Ft					Lafmid BA
L0435	Infant brain, LLNL array of Dr. M. Soares 1NIB					lafmid BA
L0438	normalized infant brain cDNA	total brain	brain			lafmid BA
L0439	Soares infant brain 1NIB		whole brain			Lafmid BA
L0454	Clontech adult human fat cell library HL1108A					lambda gt10
L0455	Human retina cDNA randomly primed sublibrary	retina	eye			lambda gt10
L0456	Human retina cDNA Tsp509I-cleaved sublibrary	retina	eye			lambda gt10
L0462	WATM1					lambda gt11
L0463	fetal brain cDNA	brain	brain			lambda gt11
L0471	Human fetal heart, Lambda ZAP Express					Lambda ZAP Express
L0475	KG1-a Lambda Zap Express cDNA library		KG1-a			Lambda Zap Express (Stratagene)
L0476	Fetal brain, Stratagene					Lambda ZAP II

L0480	Stratagene cat#937212 (1992)						Lambda ZAP, pBluescript SK(-)
L0481	CD34+DIRECTIONAL						Lambda ZAPII
L0483	Human pancreatic islet						Lambda ZAPII
L0485	STRATAGENE Human skeletal muscle cDNA library, cat. #936215.				leg muscle		Lambda ZAPII
L0493	NCI CGAP_Ov26			papillary serous carcinoma	ovary		pAMP1
L0497	NCI CGAP_HSC4			CD34+, CD38- from normal bone marrow donor	bone marrow		pAMP1
L0499	NCI CGAP_HSC2			stem cell 34+/38+	bone marrow		pAMP1
L0500	NCI CGAP_Bm20			oligodendroglioma	brain		pAMP1
L0506	NCI CGAP_Br16			lobular carcinoma in situ	breast		pAMP1
L0509	NCI CGAP_Lu26			invasive adenocarcinoma	lung		pAMP1
L0510	NCI CGAP_Ov33			borderline ovarian carcinoma	ovary		pAMP1
L0511	NCI CGAP_Ov34			borderline ovarian carcinoma	ovary		pAMP1
L0514	NCI CGAP_Ov31			papillary serous carcinoma	ovary		pAMP1
L0515	NCI CGAP_Ov32			papillary serous carcinoma	ovary		pAMP1
L0517	NCI CGAP_Pr1						pAMP10
L0518	NCI CGAP_Pr2						pAMP10
L0519	NCI CGAP_Pr3						pAMP10
L0520	NCI CGAP_Alvi			alveolar rhabdomyosarcoma			pAMP10
L0521	NCI CGAP_Ew1			Ewing's sarcoma			pAMP10
L0522	NCI CGAP_Kid1			kidney			pAMP10
L0526	NCI CGAP_Pr12			metastatic prostate bone lesion			pAMP10
L0527	NCI CGAP_Ov2			ovary			pAMP10
L0528	NCI CGAP_Pr5			prostate			pAMP10
L0529	NCI CGAP_Pr6			prostate			pAMP10
L0530	NCI CGAP_Pr8			prostate			pAMP10
L0532	NCI CGAP_Thy1			thyroid			pAMP10
L0534	Chromosome 7 Fetal Brain cDNA Library			brain	brain		pAMP10

L0539	Chromosome 7 Placental cDNA Library		placenta			pAMP10
L0540	NCL_CGAP_Pr10	invasive prostate tumor	prostate			pAMP10
L0553	NCL_CGAP_Co22	colonic adenocarcinoma	colon			pAMP10
L0558	NCL_CGAP_Ov40	endometrioid ovarian metastasis	ovary			pAMP10
L0559	NCL_CGAP_Ov39	papillary serous ovarian metastasis	ovary			pAMP10
L0560	NCL_CGAP_HN12	moderate to poorly differentiated invasive carcinoma	tongue			pAMP10
L0561	NCL_CGAP_HN11	normal squamous epithelium	tongue			pAMP10
L0562	Chromosome 7 HeLa cDNA Library			HeLa cell line; ATCC		pAMP10
L0564	J1a bone marrow stroma	bone marrow stroma				pBluescript
L0565	Normal Human Trabecular Bone Cells	Bone	Hip			pBluescript
L0581	Stratagene liver (#937224)		liver			pBluescript SK
L0586	HTCDL1					pBluescript SK(-)
L0588	Stratagene endothelial cell 937223					pBluescript SK-
L0589	Stratagene fetal retina 937202					pBluescript SK-
L0590	Stratagene fibroblast (#937212)					pBluescript SK-
L0591	Stratagene HeLa cell s3 937216					pBluescript SK-
L0592	Stratagene hNT neuron (#937233)					pBluescript SK-
L0593	Stratagene neuroepithelium (#937231)					pBluescript SK-
L0594	Stratagene					pBluescript SK-

	neuroepithelium NT2RAMI 937234						
L0595	Stratagene NT2 neuronal precursor 937230	neuroepithelial cells	brain				pBluescript SK-
L0596	Stratagene colon (#937204)		colon				pBluescript SK-
L0598	Morton Fetal Cochlea	cochlea	ear				pBluescript SK-
L0599	Stratagene lung (#937210)		lung				pBluescript SK-
L0600	Weizmann Olfactory Epithelium	olfactory epithelium	nose				pBluescript SK-
L0601	Stratagene pancreas (#937208)		pancreas				pBluescript SK-
L0602	Pancreatic Islet	pancreatic islet	pancreas				pBluescript SK-
L0603	Stratagene placenta (#937225)		placenta				pBluescript SK-
L0604	Stratagene muscle 937209	muscle	skeletal muscle				pBluescript SK-
L0605	Stratagene fetal spleen (#937205)	fetal spleen	spleen				pBluescript SK-
L0606	NCL CGAP_Lym5	follicular lymphoma	lymph node				pBluescript SK-
L0608	Stratagene lung carcinoma 937218	lung carcinoma	lung	NCI-H69			pBluescript SK-
L0611	Schiller meningioma	meningioma	brain				pBluescript SK- (Stratagene)
L0615	22 week old human fetal liver cDNA library						pBluescriptII SK(-)
L0617	Chromosome 22 exon						pBluescriptIIKS+
L0622	HM1						pcDNAII (Invitrogen)
L0623	HM3	pectoral muscle (after mastectomy)					pcDNAII (Invitrogen)
L0625	NCL CGAP_AR1	bulk alveolar tumor					pCMV-SPORT2
L0629	NCL CGAP_Mel3	metastatic melanoma to bowel	bowel (skin primary)				pCMV-SPORT4

L0630	NCL_CGAP_CNS1	substantia nigra	brain		pCMV-SPORT4
L0632	NCL_CGAP_Li5	hepatic adenoma	liver		pCMV-SPORT4
L0633	NCL_CGAP_Lu6	small cell carcinoma	lung		pCMV-SPORT4
L0635	NCL_CGAP_PNS1	dorsal root ganglion	peripheral nervous system		pCMV-SPORT4
L0636	NCL_CGAP_Pit1	four pooled pituitary adenomas	brain		pCMV-SPORT6
L0637	NCL_CGAP_Bm53	three pooled meningiomas	brain		pCMV-SPORT6
L0638	NCL_CGAP_Bm35	tumor, 5 pooled (see description)	brain		pCMV-SPORT6
L0639	NCL_CGAP_Bm52	tumor, 5 pooled (see description)	brain		pCMV-SPORT6
L0640	NCL_CGAP_Br18	four pooled high-grade tumors, including two prima	breast		pCMV-SPORT6
L0641	NCL_CGAP_Co17	juvenile granulosa tumor	colon		pCMV-SPORT6
L0642	NCL_CGAP_Co18	moderately differentiated adenocarcinoma	colon		pCMV-SPORT6
L0643	NCL_CGAP_Co19	moderately differentiated adenocarcinoma	colon		pCMV-SPORT6
L0644	NCL_CGAP_Co20	moderately differentiated adenocarcinoma	colon		pCMV-SPORT6
L0645	NCL_CGAP_Co21	moderately differentiated adenocarcinoma	colon		pCMV-SPORT6
L0646	NCL_CGAP_Co14	moderately-differentiated adenocarcinoma	colon		pCMV-SPORT6
L0647	NCL_CGAP_Sar4	five pooled sarcomas, including myxoid liposarcoma	connective tissue		pCMV-SPORT6
L0648	NCL_CGAP_Eso2	squamous cell carcinoma	esophagus		pCMV-SPORT6
L0649	NCL_CGAP_GU1	2 pooled high-grade transitional cell tumors	genitourinary tract		pCMV-SPORT6
L0650	NCL_CGAP_Kid13	2 pooled Wilms' tumors, one primary and one metast	kidney		pCMV-SPORT6
L0651	NCL_CGAP_Kid8	renal cell tumor	kidney		pCMV-SPORT6
L0652	NCL_CGAP_Lu27	four pooled poorly-	lung		pCMV-SPORT6

L0653	NCL_CGAP_Lu28	differentiated adenocarcinomas	lung			pCMV-SPORT6
L0654	NCL_CGAP_Lu31	two pooled squamous cell carcinomas	lung, cell line			pCMV-SPORT6
L0655	NCL_CGAP_Lym12	lymphoma, follicular mixed small and large cell	lymph node			pCMV-SPORT6
L0656	NCL_CGAP_Ov38	normal epithelium	ovary			pCMV-SPORT6
L0657	NCL_CGAP_Ov23	tumor, 5 pooled (see description)	ovary			pCMV-SPORT6
L0658	NCL_CGAP_Ov35	tumor, 5 pooled (see description)	ovary			pCMV-SPORT6
L0659	NCL_CGAP_Pan1	adenocarcinoma	pancreas			pCMV-SPORT6
L0661	NCL_CGAP_Mel15	malignant melanoma, metastatic to lymph node	skin			pCMV-SPORT6
L0662	NCL_CGAP_Gas4	poorly differentiated adenocarcinoma with signet r	stomach			pCMV-SPORT6
L0663	NCL_CGAP_Ut2	moderately-differentiated endometrial adenocarcinoma	uterus			pCMV-SPORT6
L0664	NCL_CGAP_Ut3	poorly-differentiated endometrial adenocarcinoma,	uterus			pCMV-SPORT6
L0665	NCL_CGAP_Ut4	serous papillary carcinoma, high grade, 2 pooled t	uterus			pCMV-SPORT6
L0666	NCL_CGAP_Ut1	well-differentiated endometrial adenocarcinoma, 7	uterus			pCMV-SPORT6
L0667	NCL_CGAP_CML1	myeloid cells, 18 pooled CML cases, BCR/ABL rearra	whole blood			pCMV-SPORT6
L0683	Stanley Frontal NS pool 2	frontal lobe (see description)	brain			pCR2.1-TOPO (Invitrogen)
L0698	Testis 2					PGEM 5zf(+)
L0709	NIH_MGC_21	choriocarcinoma	placenta			POTB7
L0710	NIH_MGC_7	small cell carcinoma	lung	MGC3		POTB7
L0717	Gessler Wilms tumor					pSPORT1
L0718	Testis 5					pSPORT1

L0731	Soares_pregnant_uterus_NbHPU		uterus		pT7T3-Pac
L0738	Human colorectal cancer				pT7T3D
L0740	Soares melanocyte 2NbHM	melanocyte			pT7T3D (Pharmacia) with a modified polylinker
L0741	Soares adult brain N2b4HB55Y		brain		pT7T3D (Pharmacia) with a modified polylinker
L0742	Soares adult brain N2b5HB55Y		brain		pT7T3D (Pharmacia) with a modified polylinker
L0743	Soares breast 2NbHBst		breast		pT7T3D (Pharmacia) with a modified polylinker
L0744	Soares breast 3NbHBst		breast		pT7T3D (Pharmacia) with a modified polylinker
L0745	Soares retina N2b4HR	retina	eye		pT7T3D (Pharmacia) with a modified polylinker
L0746	Soares retina N2b5HR	retina	eye		pT7T3D (Pharmacia) with a modified polylinker
L0747	Soares_fetal_heart_NbHH 19W		heart		pT7T3D (Pharmacia) with a modified polylinker
L0748	Soares fetal liver spleen 1NFLS		Liver and Spleen		pT7T3D (Pharmacia) with a modified polylinker
L0749	Soares_fetal_liver_spleen_1NFLS_S1		Liver and Spleen		pT7T3D (Pharmacia) with a modified polylinker

L0750	Soares_fetal_lung_NbHL19W		lung			pT7T3D (Pharmacia) with a modified polylinker
L0751	Soares ovary tumor NbHOT	ovarian tumor	ovary			pT7T3D (Pharmacia) with a modified polylinker
L0752	Soares_parathyroid_tumor _NbHPA	parathyroid tumor	parathyroid gland			pT7T3D (Pharmacia) with a modified polylinker
L0753	Soares_pineal_gland_N3 HPG		pineal gland			pT7T3D (Pharmacia) with a modified polylinker
L0754	Soares_placenta Nb2HP		placenta			pT7T3D (Pharmacia) with a modified polylinker
L0755	Soares_placenta_8to9weeks_2NbHP8to9W		placenta			pT7T3D (Pharmacia) with a modified polylinker
L0756	Soares_multiple_sclerosis _2NbHMSF	multiple sclerosis lesions				pT7T3D (Pharmacia) with a modified polylinker V_TYPE
L0757	Soares_senescent_fibroblasts_NbHSF	senescent fibroblast				pT7T3D (Pharmacia) with a modified polylinker V_TYPE
L0758	Soares_testis_NHT					pT7T3D-Pac (Pharmacia) with a modified polylinker
L0759	Soares_total_fetus_Nb2HF8_9w					pT7T3D-Pac (Pharmacia) with a modified polylinker
L0761	NCL CGAP_CLL1	B-cell, chronic lymphocytic				pT7T3D-Pac

			leukemia				(Pharmacia) with a modified polylinker
L0762	NCL_CGAP_Br1.1		breast				pT7T3D-Pac (Pharmacia) with a modified polylinker
L0763	NCL_CGAP_Br2		breast				pT7T3D-Pac (Pharmacia) with a modified polylinker
L0764	NCL_CGAP_Co3		colon				pT7T3D-Pac (Pharmacia) with a modified polylinker
L0766	NCL_CGAP_GCB1		germinal center B cell				pT7T3D-Pac (Pharmacia) with a modified polylinker
L0767	NCL_CGAP_GC3		pooled germ cell tumors				pT7T3D-Pac (Pharmacia) with a modified polylinker
L0768	NCL_CGAP_GC4		pooled germ cell tumors				pT7T3D-Pac (Pharmacia) with a modified polylinker
L0769	NCL_CGAP_Bm25		anaplastic oligodendroglioma		brain		pT7T3D-Pac (Pharmacia) with a modified polylinker
L0770	NCL_CGAP_Bm23		glioblastoma (pooled)		brain		pT7T3D-Pac (Pharmacia) with a modified polylinker
L0771	NCL_CGAP_Co8		adenocarcinoma		colon		pT7T3D-Pac (Pharmacia) with a modified polylinker
L0772	NCL_CGAP_Co10		colon tumor RER+		colon		pT7T3D-Pac (Pharmacia) with a modified polylinker
L0773	NCL_CGAP_Co9		colon tumor RER+		colon		pT7T3D-Pac

L0774	NCI_CGAP_Kid3			kidney			(Pharmacia) with a modified polylinker
L0775	NCI_CGAP_Kid5	2 pooled tumors (clear cell type)		kidney			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0776	NCI_CGAP_Lu5	carcinoid		lung			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0777	Soares_NhHMPu_S1	Pooled human melanocyte, fetal heart, and pregnant		mixed (see below)			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0779	Soares_NFL_T_GBC_S1			pooled			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0780	Soares_NSF_F8_9W_OT_PA_P_S1			pooled			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0782	NCI_CGAP_Pr21	normal prostate		prostate			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0783	NCI_CGAP_Pr22	normal prostate		prostate			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0784	NCI_CGAP_Lei2	leiomyosarcoma		soft tissue			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0785	Barstead spleen HPLRB2			spleen			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0786	Soares_NbHFB			whole brain			pT7T3D-Pac

							(Pharmacia) with a modified polylinker
L0787	NCL_CGAP_Sub1						pT7T3D-Pac (Pharmacia) with a modified polylinker
L0788	NCL_CGAP_Sub2						pT7T3D-Pac (Pharmacia) with a modified polylinker
L0789	NCL_CGAP_Sub3						pT7T3D-Pac (Pharmacia) with a modified polylinker
L0790	NCL_CGAP_Sub4						pT7T3D-Pac (Pharmacia) with a modified polylinker
L0791	NCL_CGAP_Sub5						pT7T3D-Pac (Pharmacia) with a modified polylinker
L0792	NCL_CGAP_Sub6						pT7T3D-Pac (Pharmacia) with a modified polylinker
L0793	NCL_CGAP_Sub7						pT7T3D-Pac (Pharmacia) with a modified polylinker
L0794	NCL_CGAP_GC6			pooled germ cell tumors			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0796	NCL_CGAP_Bm50			medulloblastoma	brain		pT7T3D-Pac (Pharmacia) with a modified polylinker
L0800	NCL_CGAP_Co16			colon tumor, RER+	colon		pT7T3D-Pac (Pharmacia) with a modified polylinker
L0803	NCL_CGAP_Kid11				kidney		pT7T3D-Pac

L0804	NCL_CGAP_Kid12	2 pooled tumors (clear cell type)	kidney			(Pharmacia) with a modified polylinker
L0805	NCL_CGAP_Lu24	carcinoid	lung			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0806	NCL_CGAP_Lu19	squamous cell carcinoma, poorly differentiated (4	lung			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0807	NCL_CGAP_Ov18	fibrothoma	ovary			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0809	NCL_CGAP_P28		prostate			pT7T3D-Pac (Pharmacia) with a modified polylinker
L0811	BATM2					PTZ18
L0946	BT0333		breast			puc18
L1942	HT0452		head_neck			puc18
L2138	ST0186		stomach			puc18
L2251	Human fetal lung	Fetal lung				
L2257	NIH_MGC_65	adenocarcinoma	colon			pCMV-SPORT6
L2258	NIH_MGC_67	retinoblastoma	eye			pCMV-SPORT6
L2260	NIH_MGC_69	large cell carcinoma, undifferentiated	lung			pCMV-SPORT6
L2261	NIH_MGC_70	epithelioid carcinoma	pancreas			pCMV-SPORT6
L2262	NIH_MGC_72	melanotic melanoma	skin			pCMV-SPORT6
L2263	NIH_MGC_66	adenocarcinoma	ovary			pCMV-SPORT6
L2265	NIH_MGC_39	adenocarcinoma	pancreas			pOTB7
L2270	Lupski_dorsal_root_ganglion	dorsal root ganglia				pCMV-SPORT6 (Life Technologies)
L2333	CT0417		colon			puc18

L2338	CT0432			colon			puc18
L2346	CT0483			colon			puc18
L2400	NN0116			nervous_normal			puc18
L2439	NN1022			nervous_normal			puc18
L2477	HT0408			head_neck			puc18
L2490	HT0545			head_neck			puc18
L2495	HT0594			head_neck			puc18
L2504	HT0636			head_neck			puc18
L2522	HT0704			head_neck			puc18
L2540	HT0728			head_neck			puc18
L2562	HT0760			head_neck			puc18
L2634	HT0872			head_neck			puc18
L2651	NIH_MGC_20		melanotic melanoma	skin			pOTB7
L2653	NIH_MGC_58		hypernephroma	kidney			pDNR-LIB (Clontech)
L2654	NIH_MGC_9		adenocarcinoma cell line	ovary			pOTB7
L2655	NIH_MGC_55		from acute myelogenous leukemia	bone marrow			pDNR-LIB (Clontech)
L2657	NIH_MGC_54		from chronic myelogenous leukemia	bone marrow			pDNR-LIB (Clontech)
L2702	NT0098			nervous_tumor			puc18
L2804	FT0103			prostate_tumor			puc18
L2854	UM0091			uterus			puc18
L2884	AN0041			amnion_normal			puc18
L2906	BN0047			breast_normal			puc18
L3002	BN0276			breast_normal			puc18
L3019	BN0303			breast_normal			puc18
L3081	ET0005			lung_tumor			puc18
L3089	ET0018			lung_tumor			puc18
L3092	ET0023			lung_tumor			puc18
L3127	ET0084			lung_tumor			puc18
L3140	MT0031			marrow			puc18

L3154	MT0050			marrow			puc18
L3212	OT0076			ovary			puc18
L3215	OT0083			ovary			puc18
L3255	FN0064			prostate_normal			puc18
L3316	FN0188			prostate_normal			puc18
L3352	TN0027			testis_normal			puc18
L3374	TN0070			testis_normal			puc18
L3388	GKC			hepatocellular carcinoma			pBluescript sk(-)
L3391	NIH_MGC_53			carcinoma, cell line			pDNR-LIB (Clontech)
L3504	HT0873			head_neck			puc18
L3521	HT0919			head_neck			puc18
L3603	UM0093			uterus			puc18
L3612	UT0011			uterus_tumor			puc18
L3636	NIH_MGC_73			brain			pDNR-LIB (Clontech)
L3643	ADB			Adrenal gland			pBluescript sk(-)
L3645	Cu			adrenal cortico adenoma for Cushing's syndrome			pBluescript sk(-)
L3649	DCB						pTriplEx2
L3655	HTC			Hypothalamus			pBluescript sk(-)
L3657	HTF			Hypothalamus			pBluescript sk(-)
L3658	cdA			pneochromocytoma			pTriplEx2
L3659	CB			cord blood			pBluescript
L3811	NPC			pituitary			pBluescript sk(-)
L3815	MDS			Bone marrow			pTriplEx2
L3817	HEM/B1			whole embryo, mainly body			pME18SFL3
L3823	NT2RM1					NT2	pUC19FL3
L3827	NT2RP2					NT2	pME18SFL3
L3828	NT2RP3					NT2	pME18SFL3
L3829	NT2RP4					NT2	pME18SFL3
L3831	OVARC1			ovary, tumor tissue			pME18SFL3

L3832	PLACE1	placenta				pME18SFL3
L3833	PLACE2	placenta				pME18SFL3
L3872	NCL_CGAP_Skn1		skin, normal, 4 pooled sa			pCMV-SPORT6
L3904	NCL_CGAP_Brn64	glioblastoma with EGFR amplification	brain			pCMV-SPORT6
L3905	NCL_CGAP_Brn67	anaplastic oligodendroglioma with 1p/19q loss	brain			pCMV-SPORT6
L4497	NCL_CGAP_Br22	invasive ductal carcinoma, 3 pooled samples	breast			pCMV-SPORT6
L4501	NCL_CGAP_Sub8					pT7T3D-Pac (Pharmacia) with a modified polylinker
L4556	NCL_CGAP_HN13	squamous cell carcinoma	tongue			pCMV-SPORT6
L4669	NCL_CGAP_Ov41	serous papillary tumor	ovary			pCMV-SPORT6
L4747	NCL_CGAP_Brn41	oligodendroglioma	brain			pT7T3D-Pac (Pharmacia) with a modified polylinker
L5565	NCL_CGAP_Brn66	glioblastoma with probably TP53 mutation and witho	brain			pCMV-SPORT6
L5566	NCL_CGAP_Brn70	anaplastic oligodendroglioma	brain			pCMV- SPORT6.ccdB
L5574	NCL_CGAP_HN19	normal epithelium	nasopharynx			pAMP10
L5575	NCL_CGAP_Brn65	glioblastoma without EGFR amplification	brain			pCMV-SPORT6
L5622	NCL_CGAP_Skn3		skin			pCMV-SPORT6
L5623	NCL_CGAP_Skn4	squamous cell carcinoma	skin			pCMV-SPORT6

Description of Table 5

Table 5 provides a key to the OMIM reference identification numbers disclosed in Table 1B.1, column 9. OMIM reference identification numbers (Column 1) were derived from Online Mendelian Inheritance in Man (Online Mendelian Inheritance in Man, OMIM. McKusick-Nathans Institute for Genetic Medicine, Johns Hopkins University (Baltimore, MD) and National Center for Biotechnology Information, National Library of Medicine, (Bethesda, MD) 2000. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>). Column 2 provides diseases associated with the cytologic band disclosed in Table 1B.1, column 8, as determined using the Morbid Map database.

Table 5

OMIM Reference	Description
101000	Meningioma, NF2-related, sporadic Schwannoma, sporadic
101000	Neurofibromatosis, type 2
101000	Neurolemmomatosis
101000	Malignant mesothelioma, sporadic
102200	Somatotrophinoma
102772	[AMP deaminase deficiency, erythrocytic]
103600	[Dysalbuminemic hyperthyroxinemia]
103600	[Dysalbuminemic hyperzincemia], 194470
103600	Analbuminemia
103850	Aldolase A deficiency
104150	[AFP deficiency, congenital]
104150	[Hereditary persistence of alpha-fetoprotein]
104500	Amelogenesis imperfecta-2, hypoplastic local type
104770	Amyloidosis, secondary, susceptibility to
106100	Angioedema, hereditary
106210	Peters anomaly
106210	Cataract, congenital, with late-onset corneal dystrophy
106210	Foveal hypoplasia, isolated, 136520
106210	Aniridia
107271	CD59 deficiency
107300	Antithrombin III deficiency
107670	Apolipoprotein A-II deficiency
110700	Vivax malaria, susceptibility to
112261	Fibrodysplasia ossificans progressiva
114550	Hepatocellular carcinoma
114835	Monocyte carboxyesterase deficiency
115500	Acatlasemia
116800	Cataract, Marner type
116806	Colorectal cancer
116860	Cavernous angiomaticous malformations
118485	Polycystic ovary syndrome with hyperandrogenemia
120070	Alport syndrome, autosomal recessive, 203780
120131	Alport syndrome, autosomal recessive, 203780
120131	Hematuria, familial benign
120140	Osteoarthritis, precocious

120140	SED congenita
120140	SMED Strudwick type
120140	Stickler syndrome, type I
120140	Wagner syndrome, type II
120140	Achondrogenesis-hypochondrogenesis, type II
120140	Kniest dysplasia
120220	Bethlem myopathy, 158810
120240	Bethlem myopathy, 158810
120260	Epiphyseal dysplasia, multiple, type 2, 600204
120550	C1q deficiency, type A
120570	C1q deficiency, type B
120575	C1q deficiency, type C
121800	Corneal dystrophy, crystalline, Schnyder
123000	Cranio metaphyseal dysplasia
123580	Cataract, congenital, autosomal dominant
123620	Cataract, cerulean, type 2, 601547
126060	Anemia, megaloblastic, due to DHFR deficiency
126090	Hyperphenylalaninemia due to pterin-4a-carbinolamine dehydratase deficiency, 264070
126337	Myxoid liposarcoma
126600	Doyle honeycomb retinal dystrophy
126600	Drusen, radial, autosomal dominant
129010	Neuropathy, congenital hypomyelinating, 1
129900	EEC syndrome-1
130500	Elliptocytosis-1
131100	Multiple endocrine neoplasia I
131100	Prolactinoma, hyperparathyroidism, carcinoid syndrome
131100	Carcinoid tumor of lung
131210	Atherosclerosis, susceptibility to
133200	Erythrokeratoderma variabilis
133701	Exostoses, multiple, type 2
133780	Vitreoretinopathy, exudative, familial
135940	Ichthyosis vulgaris, 146700
136132	[Fish-odor syndrome], 602079
136435	Ovarian dysgenesis, hypergonadotropic, with normal karyotype, 233300
136530	Male infertility, familial
138030	[Hyperproglucagonemia]
138140	Glucose transport defect, blood-brain barrier
138760	[Glyoxalase II deficiency]
138981	Pulmonary alveolar proteinosis, 265120
140100	[Anhaptoglobinemia]
140100	[Hypohaptoglobinemia]
142600	Hemolytic anemia due to hexokinase deficiency
143200	Wagner syndrome
143200	Erosive vitreoretinopathy
145001	Hyperparathyroidism-jaw tumor syndrome
146760	[IgG receptor I, phagocytic, familial deficiency of]
146790	Lupus nephritis, susceptibility to
147050	Atopy
148900	Klippel-Feil syndrome with laryngeal malformation
151385	Leukemia, acute myeloid
151390	Leukemia, acute T-cell

151670	Hepatic lipase deficiency
152445	Vohwinkel syndrome, 124500
152445	Erythrokeratoderma, progressive symmetric, 602036
153700	Macular dystrophy, vitelliform type
154545	Chronic infections, due to opsonin defect
155555	[Red hair/fair skin]
155555	UV-induced skin damage, vulnerability to
159001	Muscular dystrophy, limb-girdle, type 1B
160980	Carney myxoma-endocrine complex
161015	Mitochondrial complex I deficiency, 252010
164009	Leukemia, acute promyelocytic, NUMA/RARA type
164500	Spinocerebellar ataxia-7
164920	Piebaldism
164920	Mast cell leukemia
164920	Mastocytosis with associated hematologic disorder
168461	Multiple myeloma, 254250
168461	Parathyroid adenomatosis 1
168461	Centrocytic lymphoma
168468	Metaphyseal chondrodysplasia, Murk Jansen type, 156400
168500	Parietal foramina
170650	Periodontitis, juvenile
171650	Lysosomal acid phosphatase deficiency
171760	Hypophosphatasia, adult, 146300
171760	Hypophosphatasia, infantile, 241500
171860	Hemolytic anemia due to phosphofructokinase deficiency
173610	Platelet alpha/delta storage pool deficiency
174000	Medullary cystic kidney disease, AD
174810	Osteolysis, familial expansile
176640	Creutzfeldt-Jakob disease, 123400
176640	Gerstmann-Straussler disease, 137440
176640	Insomnia, fatal familial
176880	Protein S deficiency
176930	Dysprothrombinemia
176930	Hypoprothrombinemia
178300	Ptois, hereditary congenital, 1
179615	Reticulosis, familial histiocytic, 267700
179615	Severe combined immunodeficiency, B cell-negative, 601457
179616	Severe combined immunodeficiency, B cell-negative, 601457
179755	Renal cell carcinoma, papillary, 1
180105	Retinitis pigmentosa-10
180200	Osteosarcoma, 259500
180200	Pinealoma with bilateral retinoblastoma
180200	Retinoblastoma
180200	Bladder cancer, 109800
180385	Leukemia, acute T-cell
180721	Retinitis pigmentosa, digenic
180840	Susceptibility to IDDM
181510	Schizophrenia
182280	Small-cell cancer of lung
182860	Pyropoikilocytosis
182860	Spherocytosis, recessive
182860	Elliptocytosis-2

186580	Arthrocutaneous granulomatosis
188826	Sorsby fundus dystrophy, 136900
189800	Preeclampsia/eclampsia
190685	Down syndrome
191181	Cervical carcinoma
191315	Insensitivity to pain, congenital, with anhidrosis, 256800
192090	Ovarian carcinoma
192090	Breast cancer, lobular
192090	Endometrial carcinoma
192090	Gastric cancer, familial, 137215
193235	Vitreoretinopathy, neovascular inflammatory
193300	Renal cell carcinoma
193300	von Hippel-Lindau syndrome
194070	Wilms tumor, type 1
194070	Denys-Drash syndrome
194070	Frasier syndrome, 136680
208400	Aspartylglucosaminuria
209901	Bardet-Biedl syndrome 1
212138	Carnitine-acylcarnitine translocase deficiency
216550	Cohen syndrome
222800	Hemolytic anemia due to bisphosphoglycerate mutase deficiency
222900	Sucrose intolerance
227646	Fanconi anemia, type D
227650	Fanconi anemia, type A
230800	Gaucher disease
230800	Gaucher disease with cardiovascular calcification
231675	Glutaricaciduria, type IIC
231680	Glutaricaciduria, type IIA
232500	Glycogen storage disease IV
232600	McArdle disease
233700	Chronic granulomatous disease due to deficiency of NCF-1
236100	Holoprosencephaly-1
236200	Homocystinuria, B6-responsive and nonresponsive types
236700	McKusick-Kaufman syndrome
240300	Autoimmune polyglandular disease, type I
245349	Lacticacidemia due to PDX1 deficiency
245900	Norum disease
245900	Fish-eye disease
249100	Familial Mediterranean fever
250850	Hypermethioninemia, persistent, autosomal dominant, due to methionine adenosyltransferase I/III deficiency
253000	Mucopolysaccharidosis IVA
253200	Maroteaux-Lamy syndrome, several forms
255800	Schwartz-Jampel syndrome
259700	Osteopetrosis, recessive
259770	Osteoporosis-pseudoglioma syndrome
259900	Hyperoxaluria, primary, type 1
266200	Anemia, hemolytic, due to PK deficiency
266600	Inflammatory bowel disease-1
267750	Knobloch syndrome
268800	Sandhoff disease, infantile, juvenile, and adult forms
268800	Spinal muscular atrophy, HEXB-related

272800	Tay-Sachs disease
272800	[Hex A pseudodeficiency]
272800	GM2-gangliosidosis, juvenile, adult
274180	Thromboxane synthase deficiency
276600	Tyrosinemia, type II
276700	Tyrosinemia, type I
300011	Menkes disease, 309400
300011	Occipital horn syndrome, 304150
300011	Cutis laxa, neonatal
300046	Mental retardation, X-linked 23, nonspecific
300047	Mental retardation, X-linked 20
300067	Subcortical laminar heterotopia, X-linked dominant
300067	Lissencephaly, X-linked
300071	Night blindness, congenital stationary, type 2
300075	Coffin-Lowry syndrome, 303600
300077	Mental retardation, X-linked 29
300110	Night blindness, congenital stationary, X-linked incomplete, 300071
300121	Subcortical laminar heterotopia, X-linked, 300067
300121	Lissencephaly, X-linked, 300067
300127	Mental retardation, X-linked, 60
300600	Ocular albinism, Forsius-Eriksson type
301000	Thrombocytopenia, X-linked, 313900
301000	Wiskott-Aldrich syndrome
301200	Amelogenesis imperfecta
301201	Amelogenesis imperfecta-3, hypoplastic type
301830	Arthrogryposis, X-linked (spinal muscular atrophy, infantile, X-linked)
301835	Arts syndrome
302350	Nance-Horan syndrome
302801	Charcot-Marie-Tooth neuropathy, X-linked-2, recessive
305435	Heterocellular hereditary persistence of fetal hemoglobin, Swiss type
305450	FG syndrome
306000	Glycogenosis, X-linked hepatic, type I
306000	Glycogenosis, X-linked hepatic, type II
307800	Hypophosphatemia, hereditary
308800	Keratosis follicularis spinulosa decalvans
309470	Mental retardation, X-linked, syndromic-3, with spastic diplegia
309500	Renpenning syndrome-1
309510	Mental retardation, X-linked, syndromic-1, with dystonic movements, ataxia, and seizures
309605	Mental retardation, X-linked, syndromic-4, with congenital contractures and low fingertip arches
309610	Mental retardation, X-linked, syndromic-2, with dysmorphism and cerebral atrophy
309850	Brunner syndrome
311050	Optic atrophy, X-linked
311200	Oral-facial-digital syndrome 1
311850	Phosphoribosyl pyrophosphate synthetase-related gout
312040	N syndrome, 310465
312060	Properdin deficiency, X-linked
312170	Pyruvate dehydrogenase deficiency
312700	Retinoschisis
313400	Spondyloepiphyseal dysplasia tarda

313700	Perineal hypospadias
313700	Prostate cancer
313700	Spinal and bulbar muscular atrophy of Kennedy, 313200
313700	Breast cancer, male, with Reifenshtein syndrome
313700	Androgen insensitivity, several forms
314580	Wieacker-Wolff syndrome
600045	Xeroderma pigmentosum, group E, subtype 2
600065	Leukocyte adhesion deficiency, 116920
600079	Colon cancer
600151	Bardet-Biedl syndrome 3
600163	Long QT syndrome-3
600223	Spinocerebellar ataxia-4
600319	Diabetes mellitus, insulin-dependent, 4
600354	Spinal muscular atrophy-1, 253300
600354	Spinal muscular atrophy-2, 253550
600354	Spinal muscular atrophy-3, 253400
600359	Bartter syndrome, type 2
600374	Bardet-Biedl syndrome 4
600528	CPT deficiency, hepatic, type I, 255120
600623	Prostate cancer, 176807
600631	Enuresis, nocturnal, 1
600678	Cancer susceptibility
600760	Pseudohypoaldosteronism, type I, 264350
600760	Liddle syndrome, 177200
600761	Pseudohypoaldosteronism, type I, 264350
600761	Liddle syndrome, 177200
600795	Dementia, familial, nonspecific
600808	Enuresis, nocturnal, 2
600811	Xeroderma pigmentosum, group E, DDB-negative subtype, 278740
600850	Schizophrenia disorder-4
600882	Charcot-Marie-Tooth neuropathy-2B
600887	Endometrial carcinoma
600897	Cataract, zonular pulverulent-1, 116200
600900	Muscular dystrophy, limb-girdle, type 2E
600958	Cardiomyopathy, familial hypertrophic, 4, 115197
600975	Glaucoma 3, primary infantile, B
601072	Deafness, autosomal recessive 8
601105	Pycnodysostosis, 265800
601145	Epilepsy, progressive myoclonic 1, 254800
601284	Hereditary hemorrhagic telangiectasia-2, 600376
601362	DiGeorge syndrome/velocardiofacial syndrome complex-2
601386	Deafness, autosomal recessive 12
601412	Deafness, autosomal dominant 7
601493	Cardiomyopathy, dilated 1C
601567	Combined factor V and VIII deficiency, 227300
601652	Glaucoma 1A, primary open angle, juvenile-onset, 137750
601669	Hirschsprung disease, one form
601769	Osteoporosis, involutional
601769	Rickets, vitamin D-resistant, 277440
601780	Ceroid-lipofuscinosis, neuronal-6, variant late infantile
601863	Bare lymphocyte syndrome, complementation group C
601884	[High bone mass]

601920	Alagille syndrome, 118450
602080	Paget disease of bone-2
602092	Deafness, autosomal recessive 18
602116	Glioma
602491	Hyperlipidemia, familial combined, 1
602568	Homocystinuria-megaloblastic anemia, cbl E type, 236270
602574	Deafness, autosomal dominant 12, 601842
602574	Deafness, autosomal dominant 8, 601543
602783	Spastic paraplegia-7

Mature Polypeptides

The present invention also encompasses mature forms of a polypeptide having the amino acid sequence of SEQ ID NO:Y and/or the amino acid sequence encoded by the cDNA in a deposited clone. Polynucleotides encoding the mature forms (such as, for example, the polynucleotide sequence in SEQ ID NO:X and/or the polynucleotide sequence contained in the cDNA of a deposited clone) are also encompassed by the invention. Moreover, fragments or variants of these polypeptides (such as, fragments as described herein, polypeptides at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99%, or 100% identical to these polypeptides, or polypeptides encoded by a polynucleotide that hybridizes under stringent conditions to the complementary strand of the polynucleotide encoding these polypeptides) are also encompassed by the invention. In preferred embodiments, these fragments or variants retain one or more functional activities of the full-length or mature form of the polypeptide (e.g., biological activity (such as, for example, activity useful in detecting, preventing, diagnosing, prognosticating, treating, and/or ameliorating gastrointestinal disorders), antigenicity (ability to bind, or compete with a polypeptide of the invention for binding, to an anti-polypeptide of the invention antibody), immunogenicity (ability to generate antibody which binds to a specific polypeptide of the invention), ability to form multimers with polypeptides of the invention, and ability to bind to a receptor or ligand for a polypeptide of the invention). Antibodies that bind the polypeptides of the invention, and polynucleotides encoding these polypeptides are also encompassed by the invention.

According to the signal hypothesis, proteins secreted by mammalian cells have a signal or secretory leader sequence which is cleaved from the mature protein once export of the growing protein chain across the rough endoplasmic reticulum has been initiated. Most mammalian cells and even insect cells cleave secreted proteins with the same specificity. However, in some cases, cleavage of a secreted protein is not entirely uniform, which results in two or more mature species of the protein. Further, it has long been known that cleavage specificity of a secreted protein is ultimately determined by the primary structure of the complete protein, that is, it is inherent in the amino acid sequence of the polypeptide.

Methods for predicting whether a protein has a signal sequence, as well as the cleavage point for that sequence, are available. For instance, the method of McGeoch, Virus Res. 3:271-

286 (1985), uses the information from a short N-terminal charged region and a subsequent uncharged region of the complete (uncleaved) protein. The method of von Heinje, *Nucleic Acids Res.* 14:4683-4690 (1986) uses the information from the residues surrounding the cleavage site, typically residues -13 to +2, where +1 indicates the amino terminus of the secreted protein. The accuracy of predicting the cleavage points of known mammalian secretory proteins for each of these methods is in the range of 75-80%. (von Heinje, *supra.*) However, the two methods do not always produce the same predicted cleavage point(s) for a given protein.

In the present case, the deduced amino acid sequence of the secreted polypeptide was analyzed by a computer program called SignalP (Henrik Nielsen et al., *Protein Engineering* 10:1-6 (1997)), which predicts the cellular location of a protein based on the amino acid sequence. As part of this computational prediction of localization, the methods of McGeoch and von Heinje are incorporated. The analysis of the amino acid sequences of the secreted proteins described herein by this program provided the results shown in Table 1A.

In specific embodiments, polypeptides of the invention comprise, or alternatively consist of, the predicted mature form of the polypeptide as delineated in columns 14 and 15 of Table 1A. Moreover, fragments or variants of these polypeptides (such as, fragments as described herein, polypeptides at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99%, or 100% identical to these polypeptides, or polypeptides encoded by a polynucleotide that hybridizes under stringent conditions to the complementary strand of the polynucleotide encoding these polypeptides) are also encompassed by the invention. In preferred embodiments, these fragments or variants retain one or more functional activities of the full-length or mature form of the polypeptide (e.g., biological activity (such as, for example, activity useful in detecting, preventing, diagnosing, prognosticating, treating, and/or ameliorating gastrointestinal disorders), antigenicity (ability to bind, or compete with a polypeptide of the invention for binding, to an anti-polypeptide of the invention antibody), immunogenicity (ability to generate antibody which binds to a specific polypeptide of the invention), ability to form multimers with polypeptides of the invention, and ability to bind to a receptor or ligand for a polypeptide of the invention). Antibodies that bind the polypeptides of the invention, and polynucleotides encoding these polypeptides are also encompassed by the invention.

Polynucleotides encoding proteins comprising, or consisting of, the predicted mature form of polypeptides of the invention (e.g., polynucleotides having the sequence of SEQ ID NO: X (Table 1A, column 4), the sequence delineated in columns 7 and 8 of Table 1A, and a sequence encoding the mature polypeptide delineated in columns 14 and 15 of Table 1A (e.g., the sequence of SEQ ID NO:X encoding the mature polypeptide delineated in columns 14 and 15 of Table 1)) are also encompassed by the invention, as are fragments or variants of these polynucleotides (such as, fragments as described herein, polynucleotides at least 80%, 85%, 90%, 95%, 96%, 97%, 98%,

99%, or 100% identical to these polynucleotides, and nucleic acids which hybridizes under stringent conditions to the complementary strand of the polynucleotide).

As one of ordinary skill would appreciate, however, cleavage sites sometimes vary from organism to organism and cannot be predicted with absolute certainty. Accordingly, the present invention provides secreted polypeptides having a sequence shown in SEQ ID NO:Y which have an N-terminus beginning within 15 residues of the predicted cleavage point (i.e., having 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, or 15 more or less contiguous residues of SEQ ID NO:Y at the N-terminus when compared to the predicted mature form of the polypeptide (e.g., the mature polypeptide delineated in columns 14 and 15 of Table 1). Similarly, it is also recognized that in some cases, cleavage of the signal sequence from a secreted protein is not entirely uniform, resulting in more than one secreted species. These polypeptides, and the polynucleotides encoding such polypeptides, are contemplated by the present invention.

Moreover, the signal sequence identified by the above analysis may not necessarily predict the naturally occurring signal sequence. For example, the naturally occurring signal sequence may be further upstream from the predicted signal sequence. However, it is likely that the predicted signal sequence will be capable of directing the secreted protein to the ER. Nonetheless, the present invention provides the mature protein produced by expression of the polynucleotide sequence of SEQ ID NO:X and/or the polynucleotide sequence contained in the cDNA of a deposited clone, in a mammalian cell (e.g., COS cells, as described below). These polypeptides, and the polynucleotides encoding such polypeptides, are contemplated by the present invention.

Polynucleotide and Polypeptide Variants

The present invention is also directed to variants of the polynucleotide sequence disclosed in SEQ ID NO:X or the complementary strand thereto, nucleotide sequences encoding the polypeptide of SEQ ID NO:Y, the nucleotide sequence of SEQ ID NO:X that encodes the polypeptide sequence as defined in columns 13 and 14 of Table 1A, nucleotide sequences encoding the polypeptide sequence as defined in columns 13 and 14 of Table 1A, the nucleotide sequence of SEQ ID NO:X encoding the polypeptide sequence as defined in Table 1B, the nucleotide sequence as defined in columns 8 and 9 of Table 2, nucleotide sequences encoding the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2, the nucleotide sequence as defined in column 6 of Table 1C, nucleotide sequences encoding the polypeptide encoded by the nucleotide sequence as defined in column 6 of Table 1C, the cDNA sequence contained in ATCC Deposit No:Z, nucleotide sequences encoding the polypeptide encoded by the cDNA sequence contained in ATCC Deposit No:Z, and/or nucleotide sequences encoding a mature (secreted) polypeptide encoded by the cDNA sequence contained in ATCC Deposit No:Z.

The present invention also encompasses variants of the polypeptide sequence disclosed in SEQ ID NO:Y, the polypeptide as defined in columns 13 and 14 of Table 1A, the polypeptide sequence as defined in columns 6 and 7 of Table 1B.1, a polypeptide sequence encoded by the polynucleotide sequence in SEQ ID NO:X, a polypeptide sequence encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2, a polypeptide sequence encoded by the nucleotide sequence as defined in column 6 of Table 1C, a polypeptide sequence encoded by the complement of the polynucleotide sequence in SEQ ID NO:X, the polypeptide sequence encoded by the cDNA sequence contained in ATCC Deposit No:Z and/or a mature (secreted) polypeptide encoded by the cDNA sequence contained in ATCC Deposit No:Z.

"Variant" refers to a polynucleotide or polypeptide differing from the polynucleotide or polypeptide of the present invention, but retaining essential properties thereof. Generally, variants are overall closely similar, and, in many regions, identical to the polynucleotide or polypeptide of the present invention.

Thus, one aspect of the invention provides an isolated nucleic acid molecule comprising, or alternatively consisting of, a polynucleotide having a nucleotide sequence selected from the group consisting of: (a) a nucleotide sequence described in SEQ ID NO:X or contained in the cDNA sequence of ATCC Deposit No:Z; (b) a nucleotide sequence in SEQ ID NO:X or the cDNA in ATCC Deposit No:Z which encodes the complete amino acid sequence of SEQ ID NO:Y or the complete amino acid sequence encoded by the cDNA in ATCC Deposit No:Z; (c) a nucleotide sequence in SEQ ID NO:X or the cDNA in ATCC Deposit No:Z which encodes a mature polypeptide (i.e., a secreted polypeptide (e.g., as delineated in columns 14 and 15 of Table 1A)); (d) a nucleotide sequence in SEQ ID NO:X or the cDNA sequence of ATCC Deposit No:Z, which encodes a biologically active fragment of a polypeptide; (e) a nucleotide sequence in SEQ ID NO:X or the cDNA sequence of ATCC Deposit No:Z, which encodes an antigenic fragment of a polypeptide; (f) a nucleotide sequence encoding a polypeptide comprising the complete amino acid sequence of SEQ ID NO:Y or the complete amino acid sequence encoded by the cDNA in ATCC Deposit No:Z; (g) a nucleotide sequence encoding a mature polypeptide of the amino acid sequence of SEQ ID NO:Y (i.e., a secreted polypeptide (e.g., as delineated in columns 14 and 15 of Table 1A)) or a mature polypeptide of the amino acid sequence encoded by the cDNA in ATCC Deposit No:Z; (h) a nucleotide sequence encoding a biologically active fragment of a polypeptide having the complete amino acid sequence of SEQ ID NO:Y or the complete amino acid sequence encoded by the cDNA in ATCC Deposit No:Z; (i) a nucleotide sequence encoding an antigenic fragment of a polypeptide having the complete amino acid sequence of SEQ ID NO:Y or the complete amino acid sequence encoded by the cDNA in ATCC Deposit No:Z; and (j) a nucleotide sequence complementary to any of the nucleotide sequences in (a), (b), (c), (d), (e), (f), (g), (h), or (i) above.

The present invention is also directed to nucleic acid molecules which comprise, or alternatively consist of, a nucleotide sequence which is at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99% or 100%, identical to, for example, any of the nucleotide sequences in (a), (b), (c), (d), (e), (f), (g), (h), (i), or (j) above, the nucleotide coding sequence in SEQ ID NO:X or the complementary strand thereto, the nucleotide coding sequence of the cDNA contained in ATCC Deposit No:Z or the complementary strand thereto, a nucleotide sequence encoding the polypeptide of SEQ ID NO:Y, a nucleotide sequence encoding a polypeptide sequence encoded by the nucleotide sequence in SEQ ID NO:X, a polypeptide sequence encoded by the complement of the polynucleotide sequence in SEQ ID NO:X, a nucleotide sequence encoding the polypeptide encoded by the cDNA contained in ATCC Deposit No:Z, the nucleotide coding sequence in SEQ ID NO:X as defined in columns 8 and 9 of Table 2 or the complementary strand thereto, a nucleotide sequence encoding the polypeptide encoded by the nucleotide sequence in SEQ ID NO:X as defined in columns 8 and 9 of Table 2 or the complementary strand thereto, the nucleotide coding sequence in SEQ ID NO:B as defined in column 6 of Table 1C or the complementary strand thereto, a nucleotide sequence encoding the polypeptide encoded by the nucleotide sequence in SEQ ID NO:B as defined in column 6 of Table 1C or the complementary strand thereto, the nucleotide sequence in SEQ ID NO:X encoding the polypeptide sequence as defined in columns 6 and 7 of Table 1B.1 or the complementary strand thereto, nucleotide sequences encoding the polypeptide as defined in column 6 and 7 of Table 1B.1 or the complementary strand thereto, and/or polynucleotide fragments of any of these nucleic acid molecules (e.g., those fragments described herein). Polynucleotides which hybridize to the complement of these nucleic acid molecules under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention, as are polypeptides encoded by these polynucleotides and nucleic acids.

In a preferred embodiment, the invention encompasses nucleic acid molecules which comprise, or alternatively, consist of a polynucleotide which hybridizes under stringent hybridization conditions, or alternatively, under lower stringency conditions, to a polynucleotide in (a), (b), (c), (d), (e), (f), (g), (h), or (i), above, as are polypeptides encoded by these polynucleotides. In another preferred embodiment, polynucleotides which hybridize to the complement of these nucleic acid molecules under stringent hybridization conditions, or alternatively, under lower stringency conditions, are also encompassed by the invention, as are polypeptides encoded by these polynucleotides.

In another embodiment, the invention provides a purified protein comprising, or alternatively consisting of, a polypeptide having an amino acid sequence selected from the group consisting of: (a) the complete amino acid sequence of SEQ ID NO:Y or the complete amino acid sequence encoded by the cDNA in ATCC Deposit No:Z; (b) the amino acid sequence of a mature (secreted) form of a polypeptide having the amino acid sequence of SEQ ID NO:Y (e.g., as

delineated in columns 14 and 15 of Table 1A) or a mature form of the amino acid sequence encoded by the cDNA in ATCC Deposit No:Z mature; (c) the amino acid sequence of a biologically active fragment of a polypeptide having the complete amino acid sequence of SEQ ID NO:Y or the complete amino acid sequence encoded by the cDNA in ATCC Deposit No:Z; and
5 (d) the amino acid sequence of an antigenic fragment of a polypeptide having the complete amino acid sequence of SEQ ID NO:Y or the complete amino acid sequence encoded by the cDNA in ATCC Deposit No:Z.

The present invention is also directed to proteins which comprise, or alternatively consist of, an amino acid sequence which is at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99% or
10 100%, identical to, for example, any of the amino acid sequences in (a), (b), (c), or (d), above, the amino acid sequence shown in SEQ ID NO:Y, the amino acid sequence encoded by the cDNA contained in ATCC Deposit No:Z, the amino acid sequence of the polypeptide encoded by the nucleotide sequence in SEQ ID NO:X as defined in columns 8 and 9 of Table 2, the amino acid sequence of the polypeptide encoded by the nucleotide sequence in SEQ ID NO:B as defined in
15 column 6 of Table 1C, the amino acid sequence as defined in columns 6 and 7 of Table 1B.1, an amino acid sequence encoded by the nucleotide sequence in SEQ ID NO:X, and an amino acid sequence encoded by the complement of the polynucleotide sequence in SEQ ID NO:X. Fragments of these polypeptides are also provided (e.g., those fragments described herein). Further proteins encoded by polynucleotides which hybridize to the complement of the nucleic acid
20 molecules encoding these amino acid sequences under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention, as are the polynucleotides encoding these proteins.

By a nucleic acid having a nucleotide sequence at least, for example, 95% "identical" to a reference nucleotide sequence of the present invention, it is intended that the nucleotide sequence
25 of the nucleic acid is identical to the reference sequence except that the nucleotide sequence may include up to five point mutations per each 100 nucleotides of the reference nucleotide sequence encoding the polypeptide. In other words, to obtain a nucleic acid having a nucleotide sequence at least 95% identical to a reference nucleotide sequence, up to 5% of the nucleotides in the reference sequence may be deleted or substituted with another nucleotide, or a number of nucleotides up to
30 5% of the total nucleotides in the reference sequence may be inserted into the reference sequence. The query sequence may be an entire sequence referred to in Table 1B or 2 as the ORF (open reading frame), or any fragment specified as described herein.

As a practical matter, whether any particular nucleic acid molecule or polypeptide is at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identical to a nucleotide sequence of the
35 present invention can be determined conventionally using known computer programs. A preferred method for determining the best overall match between a query sequence (a sequence of the present invention) and a subject sequence, also referred to as a global sequence alignment, can be

determined using the FASTDB computer program based on the algorithm of Brutlag et al. (Comp. App. Biosci. 6:237-245 (1990)). In a sequence alignment the query and subject sequences are both DNA sequences. An RNA sequence can be compared by converting U's to T's. The result of said global sequence alignment is expressed as percent identity. Preferred parameters used in a FASTDB alignment of DNA sequences to calculate percent identity are: Matrix=Unitary, k-tuple=4, Mismatch Penalty=1, Joining Penalty=30, Randomization Group Length=0, Cutoff Score=1, Gap Penalty=5, Gap Size Penalty 0.05, Window Size=500 or the length of the subject nucleotide sequence, whichever is shorter.

If the subject sequence is shorter than the query sequence because of 5' or 3' deletions, not because of internal deletions, a manual correction must be made to the results. This is because the FASTDB program does not account for 5' and 3' truncations of the subject sequence when calculating percent identity. For subject sequences truncated at the 5' or 3' ends, relative to the query sequence, the percent identity is corrected by calculating the number of bases of the query sequence that are 5' and 3' of the subject sequence, which are not matched/aligned, as a percent of the total bases of the query sequence. Whether a nucleotide is matched/aligned is determined by results of the FASTDB sequence alignment. This percentage is then subtracted from the percent identity, calculated by the above FASTDB program using the specified parameters, to arrive at a final percent identity score. This corrected score is what is used for the purposes of the present invention. Only bases outside the 5' and 3' bases of the subject sequence, as displayed by the FASTDB alignment, which are not matched/aligned with the query sequence, are calculated for the purposes of manually adjusting the percent identity score.

For example, a 90 base subject sequence is aligned to a 100 base query sequence to determine percent identity. The deletions occur at the 5' end of the subject sequence and therefore, the FASTDB alignment does not show a matched/alignment of the first 10 bases at 5' end. The 10 unpaired bases represent 10% of the sequence (number of bases at the 5' and 3' ends not matched/total number of bases in the query sequence) so 10% is subtracted from the percent identity score calculated by the FASTDB program. If the remaining 90 bases were perfectly matched the final percent identity would be 90%. In another example, a 90 base subject sequence is compared with a 100 base query sequence. This time the deletions are internal deletions so that there are no bases on the 5' or 3' of the subject sequence which are not matched/aligned with the query. In this case the percent identity calculated by FASTDB is not manually corrected. Once again, only bases 5' and 3' of the subject sequence which are not matched/aligned with the query sequence are manually corrected for. No other manual corrections are to be made for the purposes of the present invention.

By a polypeptide having an amino acid sequence at least, for example, 95% "identical" to a query amino acid sequence of the present invention, it is intended that the amino acid sequence of the subject polypeptide is identical to the query sequence except that the subject polypeptide

sequence may include up to five amino acid alterations per each 100 amino acids of the query amino acid sequence. In other words, to obtain a polypeptide having an amino acid sequence at least 95% identical to a query amino acid sequence, up to 5% of the amino acid residues in the subject sequence may be inserted, deleted, (indels) or substituted with another amino acid. These alterations of the reference sequence may occur at the amino or carboxy terminal positions of the reference amino acid sequence or anywhere between those terminal positions, interspersed either individually among residues in the reference sequence or in one or more contiguous groups within the reference sequence.

As a practical matter, whether any particular polypeptide is at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identical to, for instance, the amino acid sequence of a polypeptide referred to in Table 1A (e.g., the amino acid sequence delineated in columns 14 and 15) or a fragment thereof, Table 1B.1 (e.g., the amino acid sequence identified in column 6) or a fragment thereof, Table 2 (e.g., the amino acid sequence of the polypeptide encoded by the polynucleotide sequence defined in columns 8 and 9 of Table 2) or a fragment thereof, the amino acid sequence of the polypeptide encoded by the polynucleotide sequence in SEQ ID NO:B as defined in column 6 of Table 1C or a fragment thereof, the amino acid sequence of the polypeptide encoded by the nucleotide sequence in SEQ ID NO:X or a fragment thereof, or the amino acid sequence of the polypeptide encoded by cDNA contained in ATCC Deposit No:Z, or a fragment thereof, the amino acid sequence of a mature (secreted) polypeptide encoded by cDNA contained in ATCC Deposit No:Z, or a fragment thereof, can be determined conventionally using known computer programs. A preferred method for determining the best overall match between a query sequence (a sequence of the present invention) and a subject sequence, also referred to as a global sequence alignment, can be determined using the FASTDB computer program based on the algorithm of Brutlag et al. (Comp. App. Biosci.6:237-245 (1990)). In a sequence alignment the query and subject sequences are either both nucleotide sequences or both amino acid sequences. The result of said global sequence alignment is expressed as percent identity. Preferred parameters used in a FASTDB amino acid alignment are: Matrix=PAM 0, k-tuple=2, Mismatch Penalty=1, Joining Penalty=20, Randomization Group Length=0, Cutoff Score=1, Window Size=sequence length, Gap Penalty=5, Gap Size Penalty=0.05, Window Size=500 or the length of the subject amino acid sequence, whichever is shorter.

If the subject sequence is shorter than the query sequence due to N- or C-terminal deletions, not because of internal deletions, a manual correction must be made to the results. This is because the FASTDB program does not account for N- and C-terminal truncations of the subject sequence when calculating global percent identity. For subject sequences truncated at the N- and C-termini, relative to the query sequence, the percent identity is corrected by calculating the number of residues of the query sequence that are N- and C-terminal of the subject sequence, which are not matched/aligned with a corresponding subject residue, as a percent of the total bases

of the query sequence. Whether a residue is matched/aligned is determined by results of the FASTDB sequence alignment. This percentage is then subtracted from the percent identity, calculated by the above FASTDB program using the specified parameters, to arrive at a final percent identity score. This final percent identity score is what is used for the purposes of the present invention. Only residues to the N- and C-termini of the subject sequence, which are not matched/aligned with the query sequence, are considered for the purposes of manually adjusting the percent identity score. That is, only query residue positions outside the farthest N- and C-terminal residues of the subject sequence.

For example, a 90 amino acid residue subject sequence is aligned with a 100 residue query sequence to determine percent identity. The deletion occurs at the N-terminus of the subject sequence and therefore, the FASTDB alignment does not show a matching/alignment of the first 10 residues at the N-terminus. The 10 unpaired residues represent 10% of the sequence (number of residues at the N- and C- termini not matched/total number of residues in the query sequence) so 10% is subtracted from the percent identity score calculated by the FASTDB program. If the remaining 90 residues were perfectly matched the final percent identity would be 90%. In another example, a 90 residue subject sequence is compared with a 100 residue query sequence. This time the deletions are internal deletions so there are no residues at the N- or C-termini of the subject sequence which are not matched/aligned with the query. In this case the percent identity calculated by FASTDB is not manually corrected. Once again, only residue positions outside the N- and C-terminal ends of the subject sequence, as displayed in the FASTDB alignment, which are not matched/aligned with the query sequence are manually corrected for. No other manual corrections are to made for the purposes of the present invention.

The polynucleotide variants of the invention may contain alterations in the coding regions, non-coding regions, or both. Especially preferred are polynucleotide variants containing alterations which produce silent substitutions, additions, or deletions, but do not alter the properties or activities of the encoded polypeptide. Nucleotide variants produced by silent substitutions due to the degeneracy of the genetic code are preferred. Moreover, polypeptide variants in which less than 50, less than 40, less than 30, less than 20, less than 10, or 5-50, 5-25, 5-10, 1-5, or 1-2 amino acids are substituted, deleted, or added in any combination are also preferred. Polynucleotide variants can be produced for a variety of reasons, e.g., to optimize codon expression for a particular host (change codons in the human mRNA to those preferred by a bacterial host such as *E. coli*).

Naturally occurring variants are called "allelic variants," and refer to one of several alternate forms of a gene occupying a given locus on a chromosome of an organism. (Genes II, Lewin, B., ed., John Wiley & Sons, New York (1985)). These allelic variants can vary at either the polynucleotide and/or polypeptide level and are included in the present invention.

Alternatively, non-naturally occurring variants may be produced by mutagenesis techniques or by direct synthesis.

Using known methods of protein engineering and recombinant DNA technology, variants may be generated to improve or alter the characteristics of the polypeptides of the present invention. For instance, one or more amino acids can be deleted from the N-terminus or C-terminus of the polypeptide of the present invention without substantial loss of biological function. As an example, Ron et al. (J. Biol. Chem. 268: 2984-2988 (1993)) reported variant KGF proteins having heparin binding activity even after deleting 3, 8, or 27 amino-terminal amino acid residues. Similarly, Interferon gamma exhibited up to ten times higher activity after deleting 8-10 amino acid residues from the carboxy terminus of this protein. (Dobeli et al., J. Biotechnology 7:199-216 (1988).)

Moreover, ample evidence demonstrates that variants often retain a biological activity similar to that of the naturally occurring protein. For example, Gayle and coworkers (J. Biol. Chem. 268:22105-22111 (1993)) conducted extensive mutational analysis of human cytokine IL-1a. They used random mutagenesis to generate over 3,500 individual IL-1a mutants that averaged 2.5 amino acid changes per variant over the entire length of the molecule. Multiple mutations were examined at every possible amino acid position. The investigators found that "[m]ost of the molecule could be altered with little effect on either [binding or biological activity]." In fact, only 23 unique amino acid sequences, out of more than 3,500 nucleotide sequences examined, produced a protein that significantly differed in activity from wild-type.

Furthermore, even if deleting one or more amino acids from the N-terminus or C-terminus of a polypeptide results in modification or loss of one or more biological functions, other biological activities may still be retained. For example, the ability of a deletion variant to induce and/or to bind antibodies which recognize the secreted form will likely be retained when less than the majority of the residues of the secreted form are removed from the N-terminus or C-terminus. Whether a particular polypeptide lacking N- or C-terminal residues of a protein retains such immunogenic activities can readily be determined by routine methods described herein and otherwise known in the art.

Thus, the invention further includes polypeptide variants which show a biological or functional activity of the polypeptides of the invention (such as, for example, activity useful in detecting, preventing, diagnosing, prognosticating, treating, and/or ameliorating cardiovascular disorders). Such variants include deletions, insertions, inversions, repeats, and substitutions selected according to general rules known in the art so as to have little effect on activity.

The present application is directed to nucleic acid molecules at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99% or 100% identical to the nucleic acid sequences disclosed herein, (e.g., encoding a polypeptide having the amino acid sequence of an N and/or C terminal deletion), irrespective of whether they encode a polypeptide having functional activity. This is because even

where a particular nucleic acid molecule does not encode a polypeptide having functional activity, one of skill in the art would still know how to use the nucleic acid molecule, for instance, as a hybridization probe or a polymerase chain reaction (PCR) primer. Uses of the nucleic acid molecules of the present invention that do not encode a polypeptide having functional activity include, inter alia, (1) isolating a gene or allelic or splice variants thereof in a cDNA library; (2) *in situ* hybridization (e.g., "FISH") to metaphase chromosomal spreads to provide precise chromosomal location of the gene, as described in Verma et al., *Human Chromosomes: A Manual of Basic Techniques*, Pergamon Press, New York (1988); (3) Northern Blot analysis for detecting mRNA expression in specific tissues (e.g., normal or diseased tissues); and (4) *in situ* hybridization (e.g., histochemistry) for detecting mRNA expression in specific tissues (e.g., normal or diseased tissues).

Preferred, however, are nucleic acid molecules having sequences at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99% or 100% identical to the nucleic acid sequences disclosed herein, which do, in fact, encode a polypeptide having functional activity. By a polypeptide having "functional activity" is meant, a polypeptide capable of displaying one or more known functional activities associated with a full-length (complete) protein and/or a mature (secreted) protein of the invention. Such functional activities include, but are not limited to, biological activity (such as, for example, activity useful in detecting, preventing, diagnosing, prognosticating, treating, and/or ameliorating gastrointestinal diseases and disorders), antigenicity (ability to bind, or compete with a polypeptide of the invention for binding, to an anti-polypeptide of the invention antibody), immunogenicity (ability to generate antibody which binds to a specific polypeptide of the invention), ability to form multimers with polypeptides of the invention, and ability to bind to a receptor or ligand for a polypeptide of the invention.

The functional activity of the polypeptides, and fragments, variants and derivatives of the invention, can be assayed by various methods.

For example, in one embodiment where one is assaying for the ability to bind or compete with a full-length polypeptide of the present invention for binding to an anti-polypeptide antibody, various immunoassays known in the art can be used, including but not limited to, competitive and non-competitive assay systems using techniques such as radioimmunoassays, ELISA (enzyme linked immunosorbent assay), "sandwich" immunoassays, immunoradiometric assays, gel diffusion precipitation reactions, immunodiffusion assays, *in situ* immunoassays (using colloidal gold, enzyme or radioisotope labels, for example), western blots, precipitation reactions, agglutination assays (e.g., gel agglutination assays, hemagglutination assays), complement fixation assays, immunofluorescence assays, protein A assays, and immunoelectrophoresis assays, etc. In one embodiment, antibody binding is detected by detecting a label on the primary antibody. In another embodiment, the primary antibody is detected by detecting binding of a secondary antibody or reagent to the primary antibody. In a further embodiment, the secondary antibody is

labeled. Many means are known in the art for detecting binding in an immunoassay and are within the scope of the present invention.

In another embodiment, where a ligand is identified, or the ability of a polypeptide fragment, variant or derivative of the invention to multimerize is being evaluated, binding can be assayed, e.g., by means well-known in the art, such as, for example, reducing and non-reducing gel chromatography, protein affinity chromatography, and affinity blotting. See generally, Phizicky et al., Microbiol. Rev. 59:94-123 (1995). In another embodiment, the ability of physiological correlates of a polypeptide of the present invention to bind to a substrate(s) of the polypeptide of the invention can be routinely assayed using techniques known in the art.

In addition, assays described herein (see Examples) and otherwise known in the art may routinely be applied to measure the ability of polypeptides of the present invention and fragments, variants and derivatives thereof to elicit polypeptide related biological activity (either *in vitro* or *in vivo*). Other methods will be known to the skilled artisan and are within the scope of the invention.

Of course, due to the degeneracy of the genetic code, one of ordinary skill in the art will immediately recognize that a large number of the nucleic acid molecules having a sequence at least 80%, 85%, 90%, 95%, 96%, 97%, 98%, 99%, or 100% identical to, for example, the nucleic acid sequence of the cDNA contained in ATCC Deposit No:Z, the nucleic acid sequence referred to in Table 1B (SEQ ID NO:X), the nucleic acid sequence disclosed in Table 1A (e.g., the nucleic acid sequence delineated in columns 7 and 8), the nucleic acid sequence disclosed in Table 2 (e.g., the nucleic acid sequence delineated in columns 8 and 9) or fragments thereof, will encode polypeptides "having functional activity." In fact, since degenerate variants of any of these nucleotide sequences all encode the same polypeptide, in many instances, this will be clear to the skilled artisan even without performing the above described comparison assay. It will be further recognized in the art that, for such nucleic acid molecules that are not degenerate variants, a reasonable number will also encode a polypeptide having functional activity. This is because the skilled artisan is fully aware of amino acid substitutions that are either less likely or not likely to significantly effect protein function (e.g., replacing one aliphatic amino acid with a second aliphatic amino acid), as further described below.

For example, guidance concerning how to make phenotypically silent amino acid substitutions is provided in Bowie et al., "Deciphering the Message in Protein Sequences: Tolerance to Amino Acid Substitutions," Science 247:1306-1310 (1990), wherein the authors indicate that there are two main strategies for studying the tolerance of an amino acid sequence to change.

The first strategy exploits the tolerance of amino acid substitutions by natural selection during the process of evolution. By comparing amino acid sequences in different species, conserved amino acids can be identified. These conserved amino acids are likely important for

protein function. In contrast, the amino acid positions where substitutions have been tolerated by natural selection indicates that these positions are not critical for protein function. Thus, positions tolerating amino acid substitution could be modified while still maintaining biological activity of the protein.

5 The second strategy uses genetic engineering to introduce amino acid changes at specific positions of a cloned gene to identify regions critical for protein function. For example, site directed mutagenesis or alanine-scanning mutagenesis (introduction of single alanine mutations at every residue in the molecule) can be used. See Cunningham and Wells, Science 244:1081-1085 (1989). The resulting mutant molecules can then be tested for biological activity.

10 As the authors state, these two strategies have revealed that proteins are surprisingly tolerant of amino acid substitutions. The authors further indicate which amino acid changes are likely to be permissive at certain amino acid positions in the protein. For example, most buried (within the tertiary structure of the protein) amino acid residues require nonpolar side chains, whereas few features of surface side chains are generally conserved. Moreover, tolerated
15 conservative amino acid substitutions involve replacement of the aliphatic or hydrophobic amino acids Ala, Val, Leu and Ile; replacement of the hydroxyl residues Ser and Thr; replacement of the acidic residues Asp and Glu; replacement of the amide residues Asn and Gln, replacement of the basic residues Lys, Arg, and His; replacement of the aromatic residues Phe, Tyr, and Trp, and replacement of the small-sized amino acids Ala, Ser, Thr, Met, and Gly.

20 Besides conservative amino acid substitution, variants of the present invention include (i) substitutions with one or more of the non-conserved amino acid residues, where the substituted amino acid residues may or may not be one encoded by the genetic code, or (ii) substitutions with one or more of the amino acid residues having a substituent group, or (iii) fusion of the mature polypeptide with another compound, such as a compound to increase the stability and/or solubility
25 of the polypeptide (for example, polyethylene glycol), (iv) fusion of the polypeptide with additional amino acids, such as, for example, an IgG Fc fusion region peptide, serum albumin (preferably human serum albumin) or a fragment thereof, or leader or secretory sequence, or a sequence facilitating purification, or (v) fusion of the polypeptide with another compound, such as albumin (including but not limited to recombinant albumin (see, e.g., U.S. Patent No. 5,876,969,
30 issued March 2, 1999, EP Patent 0 413 622, and U.S. Patent No. 5,766,883, issued June 16, 1998, herein incorporated by reference in their entirety)). Such variant polypeptides are deemed to be within the scope of those skilled in the art from the teachings herein.

For example, polypeptide variants containing amino acid substitutions of charged amino acids with other charged or neutral amino acids may produce proteins with improved
35 characteristics, such as less aggregation. Aggregation of pharmaceutical formulations both reduces activity and increases clearance due to the aggregate's immunogenic activity. See

Pinckard et al., Clin. Exp. Immunol. 2:331-340 (1967); Robbins et al., Diabetes 36: 838-845 (1987); Cleland et al., Crit. Rev. Therapeutic Drug Carrier Systems 10:307-377 (1993).

A further embodiment of the invention relates to polypeptides which comprise the amino acid sequence of a polypeptide having an amino acid sequence which contains at least one amino acid substitution, but not more than 50 amino acid substitutions, even more preferably, not more than 40 amino acid substitutions, still more preferably, not more than 30 amino acid substitutions, and still even more preferably, not more than 20 amino acid substitutions from a polypeptide sequence disclosed herein. Of course it is highly preferable for a polypeptide to have an amino acid sequence which, for example, comprises the amino acid sequence of a polypeptide of SEQ ID NO:Y, the amino acid sequence of the mature (e.g., secreted) polypeptide of SEQ ID NO:Y, an amino acid sequence encoded by SEQ ID NO:X, an amino acid sequence encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, an amino acid sequence encoded by the complement of SEQ ID NO:X, an amino acid sequence encoded by cDNA contained in ATCC Deposit No:Z, and/or the amino acid sequence of a mature (secreted) polypeptide encoded by cDNA contained in ATCC Deposit No:Z, or a fragment thereof, which contains, in order of ever-increasing preference, at least one, but not more than 10, 9, 8, 7, 6, 5, 4, 3, 2 or 1 amino acid substitutions.

In specific embodiments, the polypeptides of the invention comprise, or alternatively, consist of, fragments or variants of a reference amino acid sequence selected from: (a) the amino acid sequence of SEQ ID NO:Y or fragments thereof (e.g., the mature form and/or other fragments described herein); (b) the amino acid sequence encoded by SEQ ID NO:X or fragments thereof; (c) the amino acid sequence encoded by the complement of SEQ ID NO:X or fragments thereof; (d) the amino acid sequence encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2 or fragments thereof; and (e) the amino acid sequence encoded by cDNA contained in ATCC Deposit No:Z or fragments thereof; wherein the fragments or variants have 1-5, 5-10, 5-25, 5-50, 10-50 or 50-150, amino acid residue additions, substitutions, and/or deletions when compared to the reference amino acid sequence. In preferred embodiments, the amino acid substitutions are conservative. Polynucleotides encoding these polypeptides are also encompassed by the invention.

Polynucleotide and Polypeptide Fragments

The present invention is also directed to polynucleotide fragments of the polynucleotides (nucleic acids) of the invention. In the present invention, a "polynucleotide fragment" refers to a polynucleotide having a nucleic acid sequence which, for example: is a portion of the cDNA contained in ATCC Deposit No:Z or the complementary strand thereto; is a portion of the polynucleotide sequence encoding the polypeptide encoded by the cDNA contained in ATCC Deposit No:Z or the complementary strand thereto; is a portion of the polynucleotide sequence

encoding the mature (secreted) polypeptide encoded by the cDNA contained in ATCC Deposit No:Z or the complementary strand thereto; is a portion of a polynucleotide sequence encoding the mature amino acid sequence as defined in columns 14 and 15 of Table 1A or the complementary strand thereto; is a portion of a polynucleotide sequence encoding the amino acid sequence encoded by the region of SEQ ID NO:X as defined in columns 8 and 9 of Table 2 or the complementary strand thereto; is a portion of the polynucleotide sequence of SEQ ID NO:X as defined in columns 8 and 9 of Table 2 or the complementary strand thereto; is a portion of the polynucleotide sequence in SEQ ID NO:X or the complementary strand thereto; is a polynucleotide sequence encoding a portion of the polypeptide of SEQ ID NO:Y; is a polynucleotide sequence encoding a portion of a polypeptide encoded by SEQ ID NO:X; is a polynucleotide sequence encoding a portion of a polypeptide encoded by the complement of the polynucleotide sequence in SEQ ID NO:X; is a portion of a polynucleotide sequence encoding the amino acid sequence encoded by the region of SEQ ID NO:B as defined in column 6 of Table 1C or the complementary strand thereto; or is a portion of the polynucleotide sequence of SEQ ID NO:B as defined in column 6 of Table 1C or the complementary strand thereto.

The polynucleotide fragments of the invention are preferably at least about 15 nt, and more preferably at least about 20 nt, still more preferably at least about 30 nt, and even more preferably, at least about 40 nt, at least about 50 nt, at least about 75 nt, or at least about 150 nt in length. A fragment "at least 20 nt in length," for example, is intended to include 20 or more contiguous bases from the cDNA sequence contained in ATCC Deposit No:Z, or the nucleotide sequence shown in SEQ ID NO:X or the complementary strand thereto. In this context "about" includes the particularly recited value or a value larger or smaller by several (5, 4, 3, 2, or 1) nucleotides, at either terminus or at both termini. These nucleotide fragments have uses that include, but are not limited to, as diagnostic probes and primers as discussed herein. Of course, larger fragments (e.g., at least 160, 170, 180, 190, 200, 250, 500, 600, 1000, or 2000 nucleotides in length) are also encompassed by the invention.

Moreover, representative examples of polynucleotide fragments of the invention comprise, or alternatively consist of, a sequence from about nucleotide number 1-50, 51-100, 101-150, 151-200, 201-250, 251-300, 301-350, 351-400, 401-450, 451-500, 501-550, 551-600, 601-650, 651-700, 701-750, 751-800, 801-850, 851-900, 901-950, 951-1000, 1001-1050, 1051-1100, 1101-1150, 1151-1200, 1201-1250, 1251-1300, 1301-1350, 1351-1400, 1401-1450, 1451-1500, 1501-1550, 1551-1600, 1601-1650, 1651-1700, 1701-1750, 1751-1800, 1801-1850, 1851-1900, 1901-1950, 1951-2000, 2001-2050, 2051-2100, 2101-2150, 2151-2200, 2201-2250, 2251-2300, 2301-2350, 2351-2400, 2401-2450, 2451-2500, 2501-2550, 2551-2600, 2601-2650, 2651-2700, 2701-2750, 2751-2800, 2801-2850, 2851-2900, 2901-2950, 2951-3000, 3001-3050, 3051-3100, 3101-3150, 3151-3200, 3201-3250, 3251-3300, 3301-3350, 3351-3400, 3401-3450, 3451-3500, 3501-3550, 3551-3600, 3601-3650, 3651-3700, 3701-3750, 3751-3800, 3801-3850, 3851-3900, 3901-

3950, 3951-4000, 4001-4050, 4051-4100, 4101-4150, 4151-4200, 4201-4250, 4251-4300, 4301-4350, 4351-4400, 4401-4450, 4451-4500, 4501-4550, 4551-4600, 4601-4650, 4651-4700, 4701-4750, 4751-4800, 4801-4850, 4851-4900, 4901-4950, 4951-5000, 5001-5050, 5051-5100, 5101-5150, 5151-5200, 5201-5250, 5251-5300, 5301-5350, 5351-5400, 5401-5450, 5451-5500, 5501-5550, 5551-5600, 5601-5650, 5651-5700, 5701-5750, 5751-5800, 5801-5850, 5851-5900, 5901-5950, 5951-6000, 6001-6050, 6051-6100, 6101-6150, 6151-6200, 6201-6250, 6251-6300, 6301-6350, 6351-6400, 6401-6450, 6451-6500, 6501-6550, 6551-6600, 6601-6650, 6651-6700, 6701-6750, 6751-6800, 6801-6850, 6851-6900, 6901-6950, 6951-7000, 7001-7050, 7051-7100, 7101-7150, 7151-7200, 7201-7250, 7251-7300 or 7301 to the end of SEQ ID NO:X, or the complementary strand thereto. In this context "about" includes the particularly recited range or a range larger or smaller by several (5, 4, 3, 2, or 1) nucleotides, at either terminus or at both termini. Preferably, these fragments encode a polypeptide which has a functional activity (e.g., biological activity; such as, for example, activity useful in detecting, preventing, diagnosing, prognosticating, treating, and/or ameliorating gastrointestinal diseases and disorders). More preferably, these polynucleotides can be used as probes or primers as discussed herein. Polynucleotides which hybridize to one or more of these polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions are also encompassed by the invention, as are polypeptides encoded by these polynucleotides.

Further representative examples of polynucleotide fragments of the invention comprise, or alternatively consist of, a sequence from about nucleotide number 1-50, 51-100, 101-150, 151-200, 201-250, 251-300, 301-350, 351-400, 401-450, 451-500, 501-550, 551-600, 601-650, 651-700, 701-750, 751-800, 801-850, 851-900, 901-950, 951-1000, 1001-1050, 1051-1100, 1101-1150, 1151-1200, 1201-1250, 1251-1300, 1301-1350, 1351-1400, 1401-1450, 1451-1500, 1501-1550, 1551-1600, 1601-1650, 1651-1700, 1701-1750, 1751-1800, 1801-1850, 1851-1900, 1901-1950, 1951-2000, 2001-2050, 2051-2100, 2101-2150, 2151-2200, 2201-2250, 2251-2300, 2301-2350, 2351-2400, 2401-2450, 2451-2500, 2501-2550, 2551-2600, 2601-2650, 2651-2700, 2701-2750, 2751-2800, 2801-2850, 2851-2900, 2901-2950, 2951-3000, 3001-3050, 3051-3100, 3101-3150, 3151-3200, 3201-3250, 3251-3300, 3301-3350, 3351-3400, 3401-3450, 3451-3500, 3501-3550, 3551-3600, 3601-3650, 3651-3700, 3701-3750, 3751-3800, 3801-3850, 3851-3900, 3901-3950, 3951-4000, 4001-4050, 4051-4100, 4101-4150, 4151-4200, 4201-4250, 4251-4300, 4301-4350, 4351-4400, 4401-4450, 4451-4500, 4501-4550, 4551-4600, 4601-4650, 4651-4700, 4701-4750, 4751-4800, 4801-4850, 4851-4900, 4901-4950, 4951-5000, 5001-5050, 5051-5100, 5101-5150, 5151-5200, 5201-5250, 5251-5300, 5301-5350, 5351-5400, 5401-5450, 5451-5500, 5501-5550, 5551-5600, 5601-5650, 5651-5700, 5701-5750, 5751-5800, 5801-5850, 5851-5900, 5901-5950, 5951-6000, 6001-6050, 6051-6100, 6101-6150, 6151-6200, 6201-6250, 6251-6300, 6301-6350, 6351-6400, 6401-6450, 6451-6500, 6501-6550, 6551-6600, 6601-6650, 6651-6700, 6701-6750, 6751-6800, 6801-6850, 6851-6900, 6901-6950, 6951-7000, 7001-7050, 7051-7100, 7101-

7150, 7151-7200, 7201-7250, 7251-7300 or 7301 to the end of the cDNA sequence contained in ATCC Deposit No:Z, or the complementary strand thereto. In this context "about" includes the particularly recited range or a range larger or smaller by several (5, 4, 3, 2, or 1) nucleotides, at either terminus or at both termini. Preferably, these fragments encode a polypeptide which has a functional activity (e.g., biological activity). More preferably, these polynucleotides can be used as probes or primers as discussed herein. Polynucleotides which hybridize to one or more of these polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions are also encompassed by the invention, as are polypeptides encoded by these polynucleotides.

Moreover, representative examples of polynucleotide fragments of the invention comprise, or alternatively consist of, a nucleic acid sequence comprising one, two, three, four, five, six, seven, eight, nine, ten, or more of the above described polynucleotide fragments of the invention in combination with a polynucleotide sequence delineated in Table 1C column 6. Additional, representative examples of polynucleotide fragments of the invention comprise, or alternatively consist of, a nucleic acid sequence comprising one, two, three, four, five, six, seven, eight, nine, ten, or more of the above described polynucleotide fragments of the invention in combination with a polynucleotide sequence that is the complementary strand of a sequence delineated in column 6 of Table 1C. In further embodiments, the above-described polynucleotide fragments of the invention comprise, or alternatively consist of, sequences delineated in Table 1C, column 6, and have a nucleic acid sequence which is different from that of the BAC fragment having the sequence disclosed in SEQ ID NO:B (see Table 1C, column 5). In additional embodiments, the above-described polynucleotide fragments of the invention comprise, or alternatively consist of, sequences delineated in Table 1C, column 6, and have a nucleic acid sequence which is different from that published for the BAC clone identified as BAC ID NO:A (see Table 1C, column 4). In additional embodiments, the above-described polynucleotides of the invention comprise, or alternatively consist of, sequences delineated Table 1C, column 6, and have a nucleic acid sequence which is different from that contained in the BAC clone identified as BAC ID NO:A (see Table 1C, column 4). Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides and polypeptides are also encompassed by the invention.

In additional specific embodiments, polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more fragments of the sequences delineated in column 6 of Table 1C, and the polynucleotide sequence of SEQ ID NO:X (e.g., as defined in Table 1C, column 2) or fragments or variants thereof. Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention.

In additional specific embodiments, polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more fragments of the sequences delineated in column 6 of Table 1C which correspond to the same ATCC Deposit No:Z (see Table 1C, column 1), and the polynucleotide sequence of SEQ ID NO:X (e.g., as defined in Table 1A, 1B, or 1C) or fragments or variants thereof. Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention.

In further specific embodiments, polynucleotides of the invention comprise, or alternatively consist of, one, two, three, four, five, six, seven, eight, nine, ten, or more fragments of the sequences delineated in the same row of column 6 of Table 1C, and the polynucleotide sequence of SEQ ID NO:X (e.g., as defined in Table 1A, 1B, or 1C) or fragments or variants thereof. Polypeptides encoded by these polynucleotides, other polynucleotides that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention.

In additional specific embodiments, polynucleotides of the invention comprise, or alternatively consist of a polynucleotide sequence in which the 3' 10 polynucleotides of one of the sequences delineated in column 6 of Table 1C and the 5' 10 polynucleotides of the sequence of SEQ ID NO:X are directly contiguous. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids that encode these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

In additional specific embodiments, polynucleotides of the invention comprise, or alternatively consist of a polynucleotide sequence in which the 3' 10 polynucleotides of one of the sequences delineated in column 6 of Table 1C and the 5' 10 polynucleotides of a fragment or variant of the sequence of SEQ ID NO:X (e.g., as described herein) are directly contiguous. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

In further specific embodiments, polynucleotides of the invention comprise, or alternatively consist of a polynucleotide sequence in which the 3' 10 polynucleotides of a fragment or variant of the sequence of SEQ ID NO:X and the 5' 10 polynucleotides of the sequence of one

of the sequences delineated in column 6 of Table 1C are directly contiguous. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

In specific embodiments, polynucleotides of the invention comprise, or alternatively consist of a polynucleotide sequence in which the 3' 10 polynucleotides of one of the sequences delineated in column 6 of Table 1C and the 5' 10 polynucleotides of another sequence in column 6 are directly contiguous. In preferred embodiments, the 3' 10 polynucleotides of one of the sequences delineated in column 6 of Table 1C is directly contiguous with the 5' 10 polynucleotides of the next sequential exon delineated in Table 1C, column 6. Nucleic acids which hybridize to the complement of these 20 contiguous polynucleotides under stringent hybridization conditions or alternatively, under lower stringency conditions, are also encompassed by the invention. Polypeptides encoded by these polynucleotides and/or nucleic acids, other polynucleotides and/or nucleic acids encoding these polypeptides, and antibodies that bind these polypeptides are also encompassed by the invention. Additionally, fragments and variants of the above-described polynucleotides, nucleic acids, and polypeptides are also encompassed by the invention.

In the present invention, a "polypeptide fragment" refers to an amino acid sequence which is a portion of the amino acid sequence contained in SEQ ID NO:Y, is a portion of the mature form of SEQ ID NO:Y as defined in columns 14 and 15 of Table 1A, a portion of an amino acid sequence encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, is a portion of an amino acid sequence encoded by the polynucleotide sequence of SEQ ID NO:X, is a portion of an amino acid sequence encoded by the complement of the polynucleotide sequence in SEQ ID NO:X, is a portion of the amino acid sequence of a mature (secreted) polypeptide encoded by the cDNA contained in ATCC Deposit No:Z, and/or is a portion of an amino acid sequence encoded by the cDNA contained in ATCC Deposit No:Z. Protein (polypeptide) fragments may be "free-standing," or comprised within a larger polypeptide of which the fragment forms a part or region, most preferably as a single continuous region. Representative examples of polypeptide fragments of the invention, include, for example, fragments comprising, or alternatively consisting of, from about amino acid number 1-20, 21-40, 41-60, 61-80, 81-100, 101-120, 121-140, 141-160, 161-180, 181-200, 201-220, 221-240, 241-260, 261-280, 281-300, 301-320, 321-340, 341-360, 361-380, 381-400, 401-420, 421-440, 441-460, 461-480, 481-500, 501-520, 521-540, 541-560, 561-580, 581-600, 601-620, 621-640, 641-660, 661-680, 681-700, 701-720, 721-740, 741-760,

761-780, 781-800, 801-820, 821-840, 841-860, 861-880, 881-900, 901-920, 921-940, 941-960, 961-980, 981-1000, 1001-1020, 1021-1040, 1041-1060, 1061-1080, 1081-1100, 1101-1120, 1121-1140, 1141-1160, 1161-1180, 1181-1200, 1201-1220, 1221-1240, 1241-1260, 1261-1280, 1281-1300, 1301-1320, 1321-1340, 1341-1360, 1361-1380, 1381-1400, 1401-1420, 1421-1440, or 1441 to the end of the coding region of cDNA and SEQ ID NO: Y. In a preferred embodiment, polypeptide fragments of the invention include, for example, fragments comprising, or alternatively consisting of, from about amino acid number 1-20, 21-40, 41-60, 61-80, 81-100, 101-120, 121-140, 141-160, 161-180, 181-200, 201-220, 221-240, 241-260, 261-280, 281-300, 301-320, 321-340, 341-360, 361-380, 381-400, 401-420, 421-440, 441-460, 461-480, 481-500, 501-520, 521-540, 541-560, 561-580, 581-600, 601-620, 621-640, 641-660, 661-680, 681-700, 701-720, 721-740, 741-760, 761-780, 781-800, 801-820, 821-840, 841-860, 861-880, 881-900, 901-920, 921-940, 941-960, 961-980, 981-1000, 1001-1020, 1021-1040, 1041-1060, 1061-1080, 1081-1100, 1101-1120, 1121-1140, 1141-1160, 1161-1180, 1181-1200, 1201-1220, 1221-1240, 1241-1260, 1261-1280, 1281-1300, 1301-1320, 1321-1340, 1341-1360, 1361-1380, 1381-1400, 1401-1420, 1421-1440, or 1441 to the end of the coding region of SEQ ID NO:Y. Moreover, polypeptide fragments of the invention may be at least about 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 100, 110, 120, 130, 140, or 150 amino acids in length. In this context "about" includes the particularly recited ranges or values, or ranges or values larger or smaller by several (5, 4, 3, 2, or 1) amino acids, at either extreme or at both extremes. Polynucleotides encoding these polypeptide fragments are also encompassed by the invention.

Even if deletion of one or more amino acids from the N-terminus of a protein results in modification or loss of one or more biological functions of the protein, other functional activities (e.g., biological activities; such as, for example, activity useful in detecting, preventing, diagnosing, prognosticating, treating, and/or ameliorating gastrointestinal diseases and disorders; ability to multimerize; ability to bind a ligand; antigenic ability useful for production of polypeptide specific antibodies) may still be retained. For example, the ability of shortened muteins to induce and/or bind to antibodies which recognize the complete or mature forms of the polypeptides generally will be retained when less than the majority of the residues of the complete or mature polypeptide are removed from the N-terminus. Whether a particular polypeptide lacking N-terminal residues of a complete polypeptide retains such immunologic activities can readily be determined by routine methods described herein and otherwise known in the art. It is not unlikely that a mutein with a large number of deleted N-terminal amino acid residues may retain some biological or immunogenic activities. In fact, peptides composed of as few as six amino acid residues may often evoke an immune response.

Accordingly, polypeptide fragments include the secreted protein as well as the mature form. Further preferred polypeptide fragments include the secreted protein or the mature form having a continuous series of deleted residues from the amino or the carboxy terminus, or both.

For example, any number of amino acids, ranging from 1-60, can be deleted from the amino terminus of either the secreted polypeptide or the mature form. Similarly, any number of amino acids, ranging from 1-30, can be deleted from the carboxy terminus of the secreted protein or mature form. Furthermore, any combination of the above amino and carboxy terminus deletions are preferred. Similarly, polynucleotides encoding these polypeptide fragments are also preferred.

The present invention further provides polypeptides having one or more residues deleted from the amino terminus of the amino acid sequence of a polypeptide disclosed herein (e.g., a polypeptide of SEQ ID NO:Y, a polypeptide as defined in columns 14 and 15 of Table 1A, a polypeptide encoded by the polynucleotide sequence contained in SEQ ID NO:X or the complement thereof, a polypeptide encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, a polypeptide encoded by the portion of SEQ ID NO:B as defined in column 6 of Table 1C, a polypeptide encoded by the cDNA contained in ATCC Deposit No:Z, and/or a mature polypeptide encoded by the cDNA contained in ATCC Deposit No:Z). In particular, N-terminal deletions may be described by the general formula m-q, where q is a whole integer representing the total number of amino acid residues in a polypeptide of the invention (e.g., the polypeptide disclosed in SEQ ID NO:Y, the mature (secreted) portion of SEQ ID NO:Y as defined in columns 14 and 15 of Table 1A, or the polypeptide encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2), and m is defined as any integer ranging from 2 to q-6. Polynucleotides encoding these polypeptides are also encompassed by the invention.

The present invention further provides polypeptides having one or more residues from the carboxy terminus of the amino acid sequence of a polypeptide disclosed herein (e.g., a polypeptide of SEQ ID NO:Y, the mature (secreted) portion of SEQ ID NO:Y as defined in columns 14 and 15 of Table 1A, a polypeptide encoded by the polynucleotide sequence contained in SEQ ID NO:X, a polypeptide encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, a polypeptide encoded by the portion of SEQ ID NO:B as defined in column 6 of Table 1C, a polypeptide encoded by the cDNA contained in ATCC Deposit No:Z, and/or a mature polypeptide encoded by the cDNA contained in ATCC Deposit No:Z). In particular, C-terminal deletions may be described by the general formula 1-n, where n is any whole integer ranging from 6 to q-1, and where n corresponds to the position of amino acid residue in a polypeptide of the invention. Polynucleotides encoding these polypeptides are also encompassed by the invention.

In addition, any of the above described N- or C-terminal deletions can be combined to produce a N- and C-terminal deleted polypeptide. The invention also provides polypeptides having one or more amino acids deleted from both the amino and the carboxyl termini, which may be described generally as having residues m-n of a polypeptide encoded by SEQ ID NO:X (e.g., including, but not limited to, the preferred polypeptide disclosed as SEQ ID NO:Y, the mature (secreted) portion of SEQ ID NO:Y as defined in columns 14 and 15 of Table 1A, and the polypeptide encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2),

the cDNA contained in ATCC Deposit No:Z, and/or the complement thereof, where n and m are integers as described above. Polynucleotides encoding these polypeptides are also encompassed by the invention.

Also as mentioned above, even if deletion of one or more amino acids from the C-terminus of a protein results in modification of loss of one or more biological functions of the protein, other functional activities (e.g., biological activities such as, for example, activity useful in detecting, preventing, diagnosing, prognosticating, treating, and/or ameliorating gastrointestinal diseases and disorders; ability to multimerize; ability to bind a ligand; antigenic ability useful for production of polypeptide specific antibodies) may still be retained. For example the ability of the shortened mutein to induce and/or bind to antibodies which recognize the complete or mature forms of the polypeptide generally will be retained when less than the majority of the residues of the complete or mature polypeptide are removed from the C-terminus. Whether a particular polypeptide lacking C-terminal residues of a complete polypeptide retains such immunologic activities can readily be determined by routine methods described herein and otherwise known in the art. It is not unlikely that a mutein with a large number of deleted C-terminal amino acid residues may retain some biological or immunogenic activities. In fact, peptides composed of as few as six amino acid residues may often evoke an immune response.

The present application is also directed to proteins containing polypeptides at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identical to a polypeptide sequence set forth herein. In preferred embodiments, the application is directed to proteins containing polypeptides at least 80%, 85%, 90%, 95%, 96%, 97%, 98% or 99% identical to polypeptides having the amino acid sequence of the specific N- and C-terminal deletions. Polynucleotides encoding these polypeptides are also encompassed by the invention.

Any polypeptide sequence encoded by, for example, the polynucleotide sequences set forth as SEQ ID NO:X or the complement thereof, (presented, for example, in Tables 1A and 2), the cDNA contained in ATCC Deposit No:Z, or the polynucleotide sequence as defined in column 6 of Table 1C, may be analyzed to determine certain preferred regions of the polypeptide. For example, the amino acid sequence of a polypeptide encoded by a polynucleotide sequence of SEQ ID NO:X (e.g., the polypeptide of SEQ ID NO:Y and the polypeptide encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2) or the cDNA contained in ATCC Deposit No:Z may be analyzed using the default parameters of the DNASTAR computer algorithm (DNASTAR, Inc., 1228 S. Park St., Madison, WI 53715 USA; <http://www.dnastar.com/>).

Polypeptide regions that may be routinely obtained using the DNASTAR computer algorithm include, but are not limited to, Garnier-Robson alpha-regions, beta-regions, turn-regions, and coil-regions; Chou-Fasman alpha-regions, beta-regions, and turn-regions; Kyte-Doolittle hydrophilic regions and hydrophobic regions; Eisenberg alpha- and

beta-amphipathic regions; Karplus-Schulz flexible regions; Emini surface-forming regions; and Jameson-Wolf regions of high antigenic index. Among highly preferred polynucleotides of the invention in this regard are those that encode polypeptides comprising regions that combine several structural features, such as several (e.g., 1, 2, 3 or 4) of the features set out above.

5 Additionally, Kyte-Doolittle hydrophilic regions and hydrophobic regions, Emini surface-forming regions, and Jameson-Wolf regions of high antigenic index (i.e., containing four or more contiguous amino acids having an antigenic index of greater than or equal to 1.5, as identified using the default parameters of the Jameson-Wolf program) can routinely be used to determine polypeptide regions that exhibit a high degree of potential for antigenicity. Regions of
10 high antigenicity are determined from data by DNASTAR analysis by choosing values which represent regions of the polypeptide which are likely to be exposed on the surface of the polypeptide in an environment in which antigen recognition may occur in the process of initiation of an immune response.

 Preferred polypeptide fragments of the invention are fragments comprising, or
15 alternatively, consisting of, an amino acid sequence that displays a functional activity (e.g. biological activity such as, for example, activity useful in detecting, preventing, diagnosing, prognosticating, treating, and/or ameliorating gastrointestinal diseases and disorders; ability to multimerize; ability to bind a ligand; antigenic ability useful for production of polypeptide specific antibodies) of the polypeptide sequence of which the amino acid sequence is a fragment. By a
20 polypeptide displaying a "functional activity" is meant a polypeptide capable of one or more known functional activities associated with a full-length protein, such as, for example, biological activity, antigenicity, immunogenicity, and/or multimerization, as described herein.

 Other preferred polypeptide fragments are biologically active fragments. Biologically active fragments are those exhibiting activity similar, but not necessarily identical, to an activity of
25 the polypeptide of the present invention. The biological activity of the fragments may include an improved desired activity, or a decreased undesirable activity.

 In preferred embodiments, polypeptides of the invention comprise, or alternatively consist of, one, two, three, four, five or more of the antigenic fragments of the polypeptide of SEQ ID NO:Y, or portions thereof. Polynucleotides encoding these polypeptides are also encompassed by
30 the invention.

Epitopes and Antibodies

 The present invention encompasses polypeptides comprising, or alternatively consisting of, an epitope of: the polypeptide sequence shown in SEQ ID NO:Y; a polypeptide sequence
35 encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide sequence encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2; the polypeptide sequence encoded by the portion of SEQ ID NO:B as defined in column 6 of Table 1C

or the complement thereto; the polypeptide sequence encoded by the cDNA contained in ATCC Deposit No:Z; or the polypeptide sequence encoded by a polynucleotide that hybridizes to the sequence of SEQ ID NO:X, the complement of the sequence of SEQ ID NO:X, the complement of a portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, or the cDNA sequence
5 contained in ATCC Deposit No:Z under stringent hybridization conditions or alternatively, under lower stringency hybridization as defined *supra*. The present invention further encompasses polynucleotide sequences encoding an epitope of a polypeptide sequence of the invention (such as, for example, the sequence disclosed in SEQ ID NO:X, or a fragment thereof), polynucleotide sequences of the complementary strand of a polynucleotide sequence encoding an epitope of the
10 invention, and polynucleotide sequences which hybridize to the complementary strand under stringent hybridization conditions or alternatively, under lower stringency hybridization conditions defined *supra*.

The term "epitopes," as used herein, refers to portions of a polypeptide having antigenic or immunogenic activity in an animal, preferably a mammal, and most preferably in a human. In
15 a preferred embodiment, the present invention encompasses a polypeptide comprising an epitope, as well as the polynucleotide encoding this polypeptide. An "immunogenic epitope," as used herein, is defined as a portion of a protein that elicits an antibody response in an animal, as determined by any method known in the art, for example, by the methods for generating antibodies described *infra*. (See, for example, Geysen et al., Proc. Natl. Acad. Sci. USA 81:3998-
20 4002 (1983)). The term "antigenic epitope," as used herein, is defined as a portion of a protein to which an antibody can immunospecifically bind its antigen as determined by any method well known in the art, for example, by the immunoassays described herein. Immunospecific binding excludes non-specific binding but does not necessarily exclude cross- reactivity with other antigens. Antigenic epitopes need not necessarily be immunogenic.

25 Fragments which function as epitopes may be produced by any conventional means. (See, e.g., Houghten, R. A., Proc. Natl. Acad. Sci. USA 82:5131-5135 (1985) further described in U.S. Patent No. 4,631,211.)

In the present invention, antigenic epitopes preferably contain a sequence of at least 4, at least 5, at least 6, at least 7, more preferably at least 8, at least 9, at least 10, at least 11, at least 12,
30 at least 13, at least 14, at least 15, at least 20, at least 25, at least 30, at least 40, at least 50, and, most preferably, between about 15 to about 30 amino acids. Preferred polypeptides comprising immunogenic or antigenic epitopes are at least 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, or 100 amino acid residues in length. Additional non-exclusive preferred antigenic epitopes include the antigenic epitopes disclosed herein, as well as portions thereof. Antigenic
35 epitopes are useful, for example, to raise antibodies, including monoclonal antibodies, that specifically bind the epitope. Preferred antigenic epitopes include the antigenic epitopes disclosed herein, as well as any combination of two, three, four, five or more of these antigenic epitopes.

Antigenic epitopes can be used as the target molecules in immunoassays. (See, for instance, Wilson et al., Cell 37:767-778 (1984); Sutcliffe et al., Science 219:660-666 (1983)).

Non-limiting examples of epitopes of polypeptides that can be used to generate antibodies of the invention include a polypeptide comprising, or alternatively consisting of, at least one, two, three, four, five, six or more of the portion(s) of SEQ ID NO:Y specified in column 6 of Table 1B.1. These polypeptide fragments have been determined to bear antigenic epitopes of the proteins of the invention by the analysis of the Jameson-Wolf antigenic index which is included in the DNASTar suite of computer programs. By "comprise" it is intended that a polypeptide contains at least one, two, three, four, five, six or more of the portion(s) of SEQ ID NO:Y shown in column 6 of Table 1B.1, but it may contain additional flanking residues on either the amino or carboxyl termini of the recited portion. Such additional flanking sequences are preferably sequences naturally found adjacent to the portion; i.e., contiguous sequence shown in SEQ ID NO:Y. The flanking sequence may, however, be sequences from a heterologous polypeptide, such as from another protein described herein or from a heterologous polypeptide not described herein. In particular embodiments, epitope portions of a polypeptide of the invention comprise one, two, three, or more of the portions of SEQ ID NO:Y shown in column 6 of Table 1B.1.

Similarly, immunogenic epitopes can be used, for example, to induce antibodies according to methods well known in the art. See, for instance, Sutcliffe et al., *supra*; Wilson et al., *supra*; Chow et al., Proc. Natl. Acad. Sci. USA 82:910-914; and Bittle et al., J. Gen. Virol. 66:2347-2354 (1985). Preferred immunogenic epitopes include the immunogenic epitopes disclosed herein, as well as any combination of two, three, four, five or more of these immunogenic epitopes. The polypeptides comprising one or more immunogenic epitopes may be presented for eliciting an antibody response together with a carrier protein, such as an albumin, to an animal system (such as rabbit or mouse), or, if the polypeptide is of sufficient length (at least about 25 amino acids), the polypeptide may be presented without a carrier. However, immunogenic epitopes comprising as few as 8 to 10 amino acids have been shown to be sufficient to raise antibodies capable of binding to, at the very least, linear epitopes in a denatured polypeptide (e.g., in Western blotting).

Epitope-bearing polypeptides of the present invention may be used to induce antibodies according to methods well known in the art including, but not limited to, *in vivo* immunization, *in vitro* immunization, and phage display methods. See, e.g., Sutcliffe et al., *supra*; Wilson et al., *supra*, and Bittle et al., J. Gen. Virol., 66:2347-2354 (1985). If *in vivo* immunization is used, animals may be immunized with free peptide; however, anti-peptide antibody titer may be boosted by coupling the peptide to a macromolecular carrier, such as keyhole limpet hemacyanin (KLH) or tetanus toxoid. For instance, peptides containing cysteine residues may be coupled to a carrier using a linker such as maleimidobenzoyl- N-hydroxysuccinimide ester (MBS), while other peptides may be coupled to carriers using a more general linking agent such as glutaraldehyde.

Animals such as rabbits, rats and mice are immunized with either free or carrier- coupled peptides, for instance, by intraperitoneal and/or intradermal injection of emulsions containing about 100 μ g of peptide or carrier protein and Freund's adjuvant or any other adjuvant known for stimulating an immune response. Several booster injections may be needed, for instance, at intervals of about
5 two weeks, to provide a useful titer of anti-peptide antibody which can be detected, for example, by ELISA assay using free peptide adsorbed to a solid surface. The titer of anti-peptide antibodies in serum from an immunized animal may be increased by selection of anti-peptide antibodies, for instance, by adsorption to the peptide on a solid support and elution of the selected antibodies according to methods well known in the art.

10 As one of skill in the art will appreciate, and as discussed above, the polypeptides of the present invention (e.g., those comprising an immunogenic or antigenic epitope) can be fused to heterologous polypeptide sequences. For example, polypeptides of the present invention (including fragments or variants thereof), may be fused with the constant domain of immunoglobulins (IgA, IgE, IgG, IgM), or portions thereof (CH1, CH2, CH3, or any combination
15 thereof and portions thereof, resulting in chimeric polypeptides. By way of another non-limiting example, polypeptides and/or antibodies of the present invention (including fragments or variants thereof) may be fused with albumin (including but not limited to recombinant human serum albumin or fragments or variants thereof (see, e.g., U.S. Patent No. 5,876,969, issued March 2, 1999, EP Patent 0 413 622, and U.S. Patent No. 5,766,883, issued June 16, 1998, herein
20 incorporated by reference in their entirety)). In a preferred embodiment, polypeptides and/or antibodies of the present invention (including fragments or variants thereof) are fused with the mature form of human serum albumin (i.e., amino acids 1 – 585 of human serum albumin as shown in Figures 1 and 2 of EP Patent 0 322 094) which is herein incorporated by reference in its entirety. In another preferred embodiment, polypeptides and/or antibodies of the present invention
25 (including fragments or variants thereof) are fused with polypeptide fragments comprising, or alternatively consisting of, amino acid residues 1-z of human serum albumin, where z is an integer from 369 to 419, as described in U.S. Patent 5,766,883 herein incorporated by reference in its entirety. Polypeptides and/or antibodies of the present invention (including fragments or variants thereof) may be fused to either the N- or C-terminal end of the heterologous protein (e.g.,
30 immunoglobulin Fc polypeptide or human serum albumin polypeptide). Polynucleotides encoding fusion proteins of the invention are also encompassed by the invention.

Such fusion proteins as those described above may facilitate purification and may increase half-life *in vivo*. This has been shown for chimeric proteins consisting of the first two domains of the human CD4-polypeptide and various domains of the constant regions of the heavy or light
35 chains of mammalian immunoglobulins. See, e.g., EP 394,827; Traunecker et al., Nature, 331:84-86 (1988). Enhanced delivery of an antigen across the epithelial barrier to the immune system has been demonstrated for antigens (e.g., insulin) conjugated to an FcRn binding partner such as IgG

or Fc fragments (see, e.g., PCT Publications WO 96/22024 and WO 99/04813). IgG fusion proteins that have a disulfide-linked dimeric structure due to the IgG portion disulfide bonds have also been found to be more efficient in binding and neutralizing other molecules than monomeric polypeptides or fragments thereof alone. See, e.g., Fountoulakis et al., J. Biochem., 270:3958-3964 (1995). Nucleic acids encoding the above epitopes can also be recombined with a gene of interest as an epitope tag (e.g., the hemagglutinin (HA) tag or flag tag) to aid in detection and purification of the expressed polypeptide. For example, a system described by Janknecht et al. allows for the ready purification of non-denatured fusion proteins expressed in human cell lines (Janknecht et al., 1991, Proc. Natl. Acad. Sci. USA 88:8972- 897). In this system, the gene of interest is subcloned into a vaccinia recombination plasmid such that the open reading frame of the gene is translationally fused to an amino-terminal tag consisting of six histidine residues. The tag serves as a matrix binding domain for the fusion protein. Extracts from cells infected with the recombinant vaccinia virus are loaded onto Ni²⁺ nitriloacetic acid-agarose column and histidine-tagged proteins can be selectively eluted with imidazole-containing buffers.

Fusion Proteins

Any polypeptide of the present invention can be used to generate fusion proteins. For example, the polypeptide of the present invention, when fused to a second protein, can be used as an antigenic tag. Antibodies raised against the polypeptide of the present invention can be used to indirectly detect the second protein by binding to the polypeptide. Moreover, because secreted proteins target cellular locations based on trafficking signals, polypeptides of the present invention which are shown to be secreted can be used as targeting molecules once fused to other proteins.

Examples of domains that can be fused to polypeptides of the present invention include not only heterologous signal sequences, but also other heterologous functional regions. The fusion does not necessarily need to be direct, but may occur through linker sequences.

In certain preferred embodiments, proteins of the invention are fusion proteins comprising an amino acid sequence that is an N and/or C- terminal deletion of a polypeptide of the invention. In preferred embodiments, the invention is directed to a fusion protein comprising an amino acid sequence that is at least 90%, 95%, 96%, 97%, 98% or 99% identical to a polypeptide sequence of the invention. Polynucleotides encoding these proteins are also encompassed by the invention.

Moreover, fusion proteins may also be engineered to improve characteristics of the polypeptide of the present invention. For instance, a region of additional amino acids, particularly charged amino acids, may be added to the N-terminus of the polypeptide to improve stability and persistence during purification from the host cell or subsequent handling and storage. Also, peptide moieties may be added to the polypeptide to facilitate purification. Such regions may be removed prior to final preparation of the polypeptide. The addition of peptide moieties to facilitate handling of polypeptides are familiar and routine techniques in the art.

As one of skill in the art will appreciate that, as discussed above, polypeptides of the present invention, and epitope-bearing fragments thereof, can be combined with heterologous polypeptide sequences. For example, the polypeptides of the present invention may be fused with heterologous polypeptide sequences, for example, the polypeptides of the present invention may
5 be fused with the constant domain of immunoglobulins (IgA, IgE, IgG, IgM) or portions thereof (CH1, CH2, CH3, and any combination thereof, including both entire domains and portions thereof), or albumin (including, but not limited to, native or recombinant human albumin or fragments or variants thereof (see, e.g., U.S. Patent No. 5,876,969, issued March 2, 1999, EP Patent 0 413 622, and U.S. Patent No. 5,766,883, issued June 16, 1998, herein incorporated by
10 reference in their entirety)), resulting in chimeric polypeptides. For example, EP-A-O 464 533 (Canadian counterpart 2045869) discloses fusion proteins comprising various portions of constant region of immunoglobulin molecules together with another human protein or part thereof. In many cases, the Fc part in a fusion protein is beneficial in therapy and diagnosis, and thus can result in, for example, improved pharmacokinetic properties (EP-A 0232 262). Alternatively,
15 deleting the Fc part after the fusion protein has been expressed, detected, and purified, would be desired. For example, the Fc portion may hinder therapy and diagnosis if the fusion protein is used as an antigen for immunizations. In drug discovery, for example, human proteins, such as hIL-5, have been fused with Fc portions for the purpose of high-throughput screening assays to identify antagonists of hIL-5. See, D. Bennett et al., *J. Molecular Recognition* 8:52-58 (1995); K.
20 Johanson et al., *J. Biol. Chem.* 270:9459-9471 (1995).

Moreover, the polypeptides of the present invention can be fused to marker sequences, such as a polypeptide which facilitates purification of the fused polypeptide. In preferred embodiments, the marker amino acid sequence is a hexa-histidine peptide, such as the tag provided in a pQE vector (QIAGEN, Inc., 9259 Eton Avenue, Chatsworth, CA, 91311), among others,
25 many of which are commercially available. As described in Gentz et al., *Proc. Natl. Acad. Sci. USA* 86:821-824 (1989), for instance, hexa-histidine provides for convenient purification of the fusion protein. Another peptide tag useful for purification, the "HA" tag, corresponds to an epitope derived from the influenza hemagglutinin protein (Wilson et al., *Cell* 37:767 (1984)).

Additional fusion proteins of the invention may be generated through the techniques of
30 gene-shuffling, motif-shuffling, exon-shuffling, and/or codon-shuffling (collectively referred to as "DNA shuffling"). DNA shuffling may be employed to modulate the activities of polypeptides of the invention, such methods can be used to generate polypeptides with altered activity, as well as agonists and antagonists of the polypeptides. See, generally, U.S. Patent Nos. 5,605,793; 5,811,238; 5,830,721; 5,834,252; and 5,837,458, and Patten et al., *Curr. Opinion Biotechnol.*
35 8:724-33 (1997); Harayama, *Trends Biotechnol.* 16(2):76-82 (1998); Hansson, et al., *J. Mol. Biol.* 287:265-76 (1999); and Lorenzo and Blasco, *Biotechniques* 24(2):308-13 (1998) (each of these patents and publications are hereby incorporated by reference in its entirety). In one embodiment,

alteration of polynucleotides corresponding to SEQ ID NO:X and the polypeptides encoded by these polynucleotides may be achieved by DNA shuffling. DNA shuffling involves the assembly of two or more DNA segments by homologous or site-specific recombination to generate variation in the polynucleotide sequence. In another embodiment, polynucleotides of the invention, or the encoded polypeptides, may be altered by being subjected to random mutagenesis by error-prone PCR, random nucleotide insertion or other methods prior to recombination. In another embodiment, one or more components, motifs, sections, parts, domains, fragments, etc., of a polynucleotide encoding a polypeptide of the invention may be recombined with one or more components, motifs, sections, parts, domains, fragments, etc. of one or more heterologous molecules.

Thus, any of these above fusions can be engineered using the polynucleotides or the polypeptides of the present invention.

Recombinant and Synthetic Production of Polypeptides of the Invention

The present invention also relates to vectors containing the polynucleotide of the present invention, host cells, and the production of polypeptides by synthetic and recombinant techniques. The vector may be, for example, a phage, plasmid, viral, or retroviral vector. Retroviral vectors may be replication competent or replication defective. In the latter case, viral propagation generally will occur only in complementing host cells.

The polynucleotides of the invention may be joined to a vector containing a selectable marker for propagation in a host. Generally, a plasmid vector is introduced in a precipitate, such as a calcium phosphate precipitate, or in a complex with a charged lipid. If the vector is a virus, it may be packaged in vitro using an appropriate packaging cell line and then transduced into host cells.

The polynucleotide insert should be operatively linked to an appropriate promoter, such as the phage lambda PL promoter, the E. coli lac, trp, phoA and tac promoters, the SV40 early and late promoters and promoters of retroviral LTRs, to name a few. Other suitable promoters will be known to the skilled artisan. The expression constructs will further contain sites for transcription initiation, termination, and, in the transcribed region, a ribosome binding site for translation. The coding portion of the transcripts expressed by the constructs will preferably include a translation initiating codon at the beginning and a termination codon (UAA, UGA or UAG) appropriately positioned at the end of the polypeptide to be translated.

As indicated, the expression vectors will preferably include at least one selectable marker. Such markers include dihydrofolate reductase, G418, glutamine synthase, or neomycin resistance for eukaryotic cell culture, and tetracycline, kanamycin or ampicillin resistance genes for culturing in E. coli and other bacteria. Representative examples of appropriate hosts include, but are not limited to, bacterial cells, such as E. coli, Streptomyces and Salmonella typhimurium cells; fungal

cells, such as yeast cells (e.g., *Saccharomyces cerevisiae* or *Pichia pastoris* (ATCC Accession No. 201178)); insect cells such as *Drosophila* S2 and *Spodoptera* Sf9 cells; animal cells such as CHO, COS, 293, and Bowes melanoma cells; and plant cells. Appropriate culture mediums and conditions for the above-described host cells are known in the art.

5 Among vectors preferred for use in bacteria include pQE70, pQE60 and pQE-9, available from QIAGEN, Inc.; pBluescript vectors, Phagescript vectors, pNH8A, pNH16a, pNH18A, pNH46A, available from Stratagene Cloning Systems, Inc.; and ptrc99a, pKK223-3, pKK233-3, pDR540, pRIT5 available from Pharmacia Biotech, Inc. Among preferred eukaryotic vectors are pWLNEO, pSV2CAT, pOG44, pXT1 and pSG available from Stratagene; and pSVK3, pBPV,
10 pMSG and pSVL available from Pharmacia. Preferred expression vectors for use in yeast systems include, but are not limited to pYES2, pYD1, pTEF1/Zeo, pYES2/GS, pPICZ, pGAPZ, pGAPZalph, pPIC9, pPIC3.5, pHIL-D2, pHIL-S1, pPIC3.5K, pPIC9K, and PAO815 (all available from Invitrogen, Carlsbad, CA). Other suitable vectors will be readily apparent to the skilled artisan.

15 Vectors which use glutamine synthase (GS) or DHFR as the selectable markers can be amplified in the presence of the drugs methionine sulphoximine or methotrexate, respectively. An advantage of glutamine synthase based vectors are the availability of cell lines (e.g., the murine myeloma cell line, NS0) which are glutamine synthase negative. Glutamine synthase expression systems can also function in glutamine synthase expressing cells (e.g., Chinese Hamster Ovary
20 (CHO) cells) by providing additional inhibitor to prevent the functioning of the endogenous gene. A glutamine synthase expression system and components thereof are detailed in PCT publications: WO87/04462; WO86/05807; WO89/01036; WO89/10404; and WO91/06657, which are hereby incorporated in their entireties by reference herein. Additionally, glutamine synthase expression vectors can be obtained from Lonza Biologics, Inc. (Portsmouth, NH). Expression and production
25 of monoclonal antibodies using a GS expression system in murine myeloma cells is described in Bebbington *et al.*, *Bio/technology* 10:169(1992) and in Biblia and Robinson *Biotechnol. Prog.* 11:1 (1995) which are herein incorporated by reference.

 The present invention also relates to host cells containing the above-described vector constructs described herein, and additionally encompasses host cells containing nucleotide
30 sequences of the invention that are operably associated with one or more heterologous control regions (e.g., promoter and/or enhancer) using techniques known of in the art. The host cell can be a higher eukaryotic cell, such as a mammalian cell (e.g., a human derived cell), or a lower eukaryotic cell, such as a yeast cell, or the host cell can be a prokaryotic cell, such as a bacterial cell. A host strain may be chosen which modulates the expression of the inserted gene sequences,
35 or modifies and processes the gene product in the specific fashion desired. Expression from certain promoters can be elevated in the presence of certain inducers; thus expression of the genetically engineered polypeptide may be controlled. Furthermore, different host cells have

characteristics and specific mechanisms for the translational and post-translational processing and modification (e.g., phosphorylation, cleavage) of proteins. Appropriate cell lines can be chosen to ensure the desired modifications and processing of the foreign protein expressed.

5 Introduction of the nucleic acids and nucleic acid constructs of the invention into the host cell can be effected by calcium phosphate transfection, DEAE-dextran mediated transfection, cationic lipid-mediated transfection, electroporation, transduction, infection, or other methods. Such methods are described in many standard laboratory manuals, such as Davis et al., *Basic Methods In Molecular Biology* (1986). It is specifically contemplated that the polypeptides of the present invention may in fact be expressed by a host cell lacking a recombinant vector.

10 In addition to encompassing host cells containing the vector constructs discussed herein, the invention also encompasses primary, secondary, and immortalized host cells of vertebrate origin, particularly mammalian origin, that have been engineered to delete or replace endogenous genetic material (e.g., the coding sequence), and/or to include genetic material (e.g., heterologous polynucleotide sequences) that is operably associated with polynucleotides of the invention, and
15 which activates, alters, and/or amplifies endogenous polynucleotides. For example, techniques known in the art may be used to operably associate heterologous control regions (e.g., promoter and/or enhancer) and endogenous polynucleotide sequences via homologous recombination (see, e.g., US Patent Number 5,641,670, issued June 24, 1997; International Publication Number WO 96/29411; International Publication Number WO 94/12650; Koller *et al.*, *Proc. Natl. Acad. Sci.*
20 *USA* 86:8932-8935 (1989); and Zijlstra *et al.*, *Nature* 342:435-438 (1989), the disclosures of each of which are incorporated by reference in their entireties).

Polypeptides of the invention can be recovered and purified from recombinant cell cultures by well-known methods including ammonium sulfate or ethanol precipitation, acid extraction, anion or cation exchange chromatography, phosphocellulose chromatography,
25 hydrophobic interaction chromatography, affinity chromatography, hydroxylapatite chromatography and lectin chromatography. Most preferably, high performance liquid chromatography ("HPLC") is employed for purification.

Polypeptides of the present invention can also be recovered from: products purified from natural sources, including bodily fluids, tissues and cells, whether directly isolated or cultured;
30 products of chemical synthetic procedures; and products produced by recombinant techniques from a prokaryotic or eukaryotic host, including, for example, bacterial, yeast, higher plant, insect, and mammalian cells. Depending upon the host employed in a recombinant production procedure, the polypeptides of the present invention may be glycosylated or may be non-glycosylated. In addition, polypeptides of the invention may also include an initial modified methionine residue, in
35 some cases as a result of host-mediated processes. Thus, it is well known in the art that the N-terminal methionine encoded by the translation initiation codon generally is removed with high efficiency from any protein after translation in all eukaryotic cells. While the N-terminal

methionine on most proteins also is efficiently removed in most prokaryotes, for some proteins, this prokaryotic removal process is inefficient, depending on the nature of the amino acid to which the N-terminal methionine is covalently linked.

5 In one embodiment, the yeast *Pichia pastoris* is used to express polypeptides of the invention in a eukaryotic system. *Pichia pastoris* is a methylotrophic yeast which can metabolize methanol as its sole carbon source. A main step in the methanol metabolism pathway is the oxidation of methanol to formaldehyde using O₂. This reaction is catalyzed by the enzyme alcohol oxidase. In order to metabolize methanol as its sole carbon source, *Pichia pastoris* must generate high levels of alcohol oxidase due, in part, to the relatively low affinity of alcohol oxidase for O₂.
10 Consequently, in a growth medium depending on methanol as a main carbon source, the promoter region of one of the two alcohol oxidase genes (*AOX1*) is highly active. In the presence of methanol, alcohol oxidase produced from the *AOX1* gene comprises up to approximately 30% of the total soluble protein in *Pichia pastoris*. See Ellis, S.B., *et al.*, *Mol. Cell. Biol.* 5:1111-21 (1985); Koutz, P.J., *et al.*, *Yeast* 5:167-77 (1989); Tschopp, J.F., *et al.*, *Nucl. Acids Res.* 15:3859-76
15 (1987). Thus, a heterologous coding sequence, such as, for example, a polynucleotide of the present invention, under the transcriptional regulation of all or part of the *AOX1* regulatory sequence is expressed at exceptionally high levels in *Pichia* yeast grown in the presence of methanol.

In one example, the plasmid vector pPIC9K is used to express DNA encoding a polypeptide of the invention, as set forth herein, in a *Pichea* yeast system essentially as described
20 in "*Pichia* Protocols: Methods in Molecular Biology," D.R. Higgins and J. Cregg, eds. The Humana Press, Totowa, NJ, 1998. This expression vector allows expression and secretion of a polypeptide of the invention by virtue of the strong *AOX1* promoter linked to the *Pichia pastoris* alkaline phosphatase (PHO) secretory signal peptide (i.e., leader) located upstream of a multiple
25 cloning site.

Many other yeast vectors could be used in place of pPIC9K, such as, pYES2, pYD1, pTEF1/Zeo, pYES2/GS, pPICZ, pGAPZ, pGAPZalpha, pPIC9, pPIC3.5, pHIL-D2, pHIL-S1, pPIC3.5K, and PAO815, as one skilled in the art would readily appreciate, as long as the proposed expression construct provides appropriately located signals for transcription, translation, secretion
30 (if desired), and the like, including an in-frame AUG as required.

In another embodiment, high-level expression of a heterologous coding sequence, such as, for example, a polynucleotide of the present invention, may be achieved by cloning the heterologous polynucleotide of the invention into an expression vector such as, for example, pGAPZ or pGAPZalpha, and growing the yeast culture in the absence of methanol.

In addition to encompassing host cells containing the vector constructs discussed herein, the invention also encompasses primary, secondary, and immortalized host cells of vertebrate origin, particularly mammalian origin, that have been engineered to delete or replace endogenous genetic material (e.g., coding sequence), and/or to include genetic material (e.g., heterologous polynucleotide sequences) that is operably associated with polynucleotides of the invention, and which activates, alters, and/or amplifies endogenous polynucleotides. For example, techniques known in the art may be used to operably associate heterologous control regions (e.g., promoter and/or enhancer) and endogenous polynucleotide sequences via homologous recombination (see, e.g., U.S. Patent No. 5,641,670, issued June 24, 1997; International Publication No. WO 96/29411, published September 26, 1996; International Publication No. WO 94/12650, published August 4, 1994; Koller et al., *Proc. Natl. Acad. Sci. USA* 86:8932-8935 (1989); and Zijlstra et al., *Nature* 342:435-438 (1989), the disclosures of each of which are incorporated by reference in their entireties).

In addition, polypeptides of the invention can be chemically synthesized using techniques known in the art (e.g., see Creighton, 1983, *Proteins: Structures and Molecular Principles*, W.H. Freeman & Co., N.Y., and Hunkapiller et al., *Nature*, 310:105-111 (1984)). For example, a polypeptide corresponding to a fragment of a polypeptide can be synthesized by use of a peptide synthesizer. Furthermore, if desired, nonclassical amino acids or chemical amino acid analogs can be introduced as a substitution or addition into the polypeptide sequence. Non-classical amino acids include, but are not limited to, to the D-isomers of the common amino acids, 2,4-diaminobutyric acid, α -amino isobutyric acid, 4-aminobutyric acid, Abu, 2-amino butyric acid, g-Abu, e-Ahx, 6-amino hexanoic acid, Aib, 2-amino isobutyric acid, 3-amino propionic acid, ornithine, norleucine, norvaline, hydroxyproline, sarcosine, citrulline, homocitrulline, cysteic acid, t-butylglycine, t-butylalanine, phenylglycine, cyclohexylalanine, b-alanine, fluoro-amino acids, designer amino acids such as b-methyl amino acids, Ca-methyl amino acids, Na-methyl amino acids, and amino acid analogs in general. Furthermore, the amino acid can be D (dextrorotary) or L (levorotary).

The invention encompasses polypeptides of the present invention which are differentially modified during or after translation, e.g., by glycosylation, acetylation, phosphorylation, amidation, derivatization by known protecting/blocking groups, proteolytic cleavage, linkage to an antibody molecule or other cellular ligand, etc. Any of numerous chemical modifications may be carried out by known techniques, including but not limited, to specific chemical cleavage by cyanogen bromide, trypsin, chymotrypsin, papain, V8 protease, NaBH_4 ; acetylation, formylation, oxidation, reduction; metabolic synthesis in the presence of tunicamycin; etc.

Additional post-translational modifications encompassed by the invention include, for example, e.g., N-linked or O-linked carbohydrate chains, processing of N-terminal or C-terminal ends), attachment of chemical moieties to the amino acid backbone, chemical modifications of

N-linked or O-linked carbohydrate chains, and addition or deletion of an N-terminal methionine residue as a result of procaryotic host cell expression. The polypeptides may also be modified with a detectable label, such as an enzymatic, fluorescent, isotopic or affinity label to allow for detection and isolation of the protein.

5 Examples of suitable enzymes include horseradish peroxidase, alkaline phosphatase, beta-galactosidase, or acetylcholinesterase; examples of suitable prosthetic group complexes include streptavidin/biotin and avidin/biotin; examples of suitable fluorescent materials include umbelliferone, fluorescein, fluorescein isothiocyanate, rhodamine, dichlorotriazinylamine fluorescein, dansyl chloride or phycoerythrin; an example of a luminescent material includes
10 luminol; examples of bioluminescent materials include luciferase, luciferin, and aequorin; and examples of suitable radioactive material include iodine (^{121}I , ^{123}I , ^{125}I , ^{131}I), carbon (^{14}C), sulfur (^{35}S), tritium (^3H), indium (^{111}In , ^{112}In , $^{113\text{m}}\text{In}$, $^{115\text{m}}\text{In}$), technetium (^{99}Tc , $^{99\text{m}}\text{Tc}$), thallium (^{201}Tl), gallium (^{68}Ga , ^{67}Ga), palladium (^{103}Pd), molybdenum (^{99}Mo), xenon (^{133}Xe), fluorine (^{18}F), ^{153}Sm , ^{177}Lu , ^{159}Gd , ^{149}Pm , ^{140}La , ^{175}Yb , ^{166}Ho , ^{90}Y , ^{47}Sc , ^{186}Re , ^{188}Re , ^{142}Pr , ^{105}Rh , and ^{97}Ru .

15 In specific embodiments, a polypeptide of the present invention or fragment or variant thereof is attached to macrocyclic chelators that associate with radiometal ions, including but not limited to, ^{177}Lu , ^{90}Y , ^{166}Ho , and ^{153}Sm , to polypeptides. In a preferred embodiment, the radiometal ion associated with the macrocyclic chelators is ^{111}In . In another preferred
20 embodiment, the radiometal ion associated with the macrocyclic chelator is ^{90}Y . In specific embodiments, the macrocyclic chelator is 1,4,7,10-tetraazacyclododecane-N,N',N'',N'''-tetraacetic acid (DOTA). In other specific embodiments, DOTA is attached to an antibody of the invention or fragment thereof via a linker molecule. Examples of linker molecules useful for conjugating
25 DOTA to a polypeptide are commonly known in the art - see, for example, DeNardo et al., Clin Cancer Res. 4(10):2483-90 (1998); Peterson et al., Bioconjug. Chem. 10(4):553-7 (1999); and Zimmerman et al, Nucl. Med. Biol. 26(8):943-50 (1999); which are hereby incorporated by reference in their entirety.

As mentioned, the proteins of the invention may be modified by either natural processes, such as posttranslational processing, or by chemical modification techniques which are well known in the art. It will be appreciated that the same type of modification may be present in the
30 same or varying degrees at several sites in a given polypeptide. Polypeptides of the invention may be branched, for example, as a result of ubiquitination, and they may be cyclic, with or without branching. Cyclic, branched, and branched cyclic polypeptides may result from posttranslation natural processes or may be made by synthetic methods. Modifications include acetylation, acylation, ADP-ribosylation, amidation, covalent attachment of flavin, covalent attachment of a
35 heme moiety, covalent attachment of a nucleotide or nucleotide derivative, covalent attachment of a lipid or lipid derivative, covalent attachment of phosphatidylinositol, cross-linking, cyclization, disulfide bond formation, demethylation, formation of covalent cross-links, formation of cysteine,

formation of pyroglutamate, formylation, gamma-carboxylation, glycosylation, GPI anchor formation, hydroxylation, iodination, methylation, myristoylation, oxidation, pegylation, proteolytic processing, phosphorylation, prenylation, racemization, selenoylation, sulfation, transfer-RNA mediated addition of amino acids to proteins such as arginylation, and ubiquitination. (See, for instance, PROTEINS - STRUCTURE AND MOLECULAR PROPERTIES, 2nd Ed., T. E. Creighton, W. H. Freeman and Company, New York (1993); POSTTRANSLATIONAL COVALENT MODIFICATION OF PROTEINS, B. C. Johnson, Ed., Academic Press, New York, pgs. 1-12 (1983); Seifter et al., Meth. Enzymol. 182:626-646 (1990); Rattan et al., Ann. N.Y. Acad. Sci. 663:48-62 (1992)).

Also provided by the invention are chemically modified derivatives of the polypeptides of the invention which may provide additional advantages such as increased solubility, stability and circulating time of the polypeptide, or decreased immunogenicity (see U.S. Patent No. 4,179,337). The chemical moieties for derivitization may be selected from water soluble polymers such as polyethylene glycol, ethylene glycol/propylene glycol copolymers, carboxymethylcellulose, dextran, polyvinyl alcohol and the like. The polypeptides may be modified at random positions within the molecule, or at predetermined positions within the molecule and may include one, two, three or more attached chemical moieties.

The polymer may be of any molecular weight, and may be branched or unbranched. For polyethylene glycol, the preferred molecular weight is between about 1 kDa and about 100 kDa (the term "about" indicating that in preparations of polyethylene glycol, some molecules will weigh more, some less, than the stated molecular weight) for ease in handling and manufacturing. Other sizes may be used, depending on the desired therapeutic profile (e.g., the duration of sustained release desired, the effects, if any on biological activity, the ease in handling, the degree or lack of antigenicity and other known effects of the polyethylene glycol to a therapeutic protein or analog). For example, the polyethylene glycol may have an average molecular weight of about 200, 500, 1000, 1500, 2000, 2500, 3000, 3500, 4000, 4500, 5000, 5500, 6000, 6500, 7000, 7500, 8000, 8500, 9000, 9500, 10,000, 10,500, 11,000, 11,500, 12,000, 12,500, 13,000, 13,500, 14,000, 14,500, 15,000, 15,500, 16,000, 16,500, 17,000, 17,500, 18,000, 18,500, 19,000, 19,500, 20,000, 25,000, 30,000, 35,000, 40,000, 45,000, 50,000, 55,000, 60,000, 65,000, 70,000, 75,000, 80,000, 85,000, 90,000, 95,000, or 100,000 kDa.

As noted above, the polyethylene glycol may have a branched structure. Branched polyethylene glycols are described, for example, in U.S. Patent No. 5,643,575; Morpurgo *et al.*, *Appl. Biochem. Biotechnol.* 56:59-72 (1996); Vorobjev *et al.*, *Nucleosides Nucleotides* 18:2745-2750 (1999); and Caliceti *et al.*, *Bioconjug. Chem.* 10:638-646 (1999), the disclosures of each of which are incorporated herein by reference.

The polyethylene glycol molecules (or other chemical moieties) should be attached to the protein with consideration of effects on functional or antigenic domains of the protein. There are a

number of attachment methods available to those skilled in the art, such as, for example, the method disclosed in EP 0 401 384 (coupling PEG to G-CSF), herein incorporated by reference; see also Malik et al., *Exp. Hematol.* 20:1028-1035 (1992), reporting pegylation of GM-CSF using tresyl chloride. For example, polyethylene glycol may be covalently bound through amino acid
5 residues via a reactive group, such as a free amino or carboxyl group. Reactive groups are those to which an activated polyethylene glycol molecule may be bound. The amino acid residues having a free amino group may include lysine residues and the N-terminal amino acid residues; those having a free carboxyl group may include aspartic acid residues glutamic acid residues and the C-terminal amino acid residue. Sulfhydryl groups may also be used as a reactive group for
10 attaching the polyethylene glycol molecules. Preferred for therapeutic purposes is attachment at an amino group, such as attachment at the N-terminus or lysine group.

As suggested above, polyethylene glycol may be attached to proteins via linkage to any of a number of amino acid residues. For example, polyethylene glycol can be linked to proteins via covalent bonds to lysine, histidine, aspartic acid, glutamic acid, or cysteine residues. One or more
15 reaction chemistries may be employed to attach polyethylene glycol to specific amino acid residues (e.g., lysine, histidine, aspartic acid, glutamic acid, or cysteine) of the protein or to more than one type of amino acid residue (e.g., lysine, histidine, aspartic acid, glutamic acid, cysteine and combinations thereof) of the protein.

One may specifically desire proteins chemically modified at the N-terminus. Using
20 polyethylene glycol as an illustration of the present composition, one may select from a variety of polyethylene glycol molecules (by molecular weight, branching, etc.), the proportion of polyethylene glycol molecules to protein (polypeptide) molecules in the reaction mix, the type of pegylation reaction to be performed, and the method of obtaining the selected N-terminally pegylated protein. The method of obtaining the N-terminally pegylated preparation (i.e.,
25 separating this moiety from other monopegylated moieties if necessary) may be by purification of the N-terminally pegylated material from a population of pegylated protein molecules. Selective proteins chemically modified at the N-terminus modification may be accomplished by reductive alkylation which exploits differential reactivity of different types of primary amino groups (lysine versus the N-terminal) available for derivatization in a particular protein. Under the appropriate
30 reaction conditions, substantially selective derivatization of the protein at the N-terminus with a carbonyl group containing polymer is achieved.

As indicated above, pegylation of the proteins of the invention may be accomplished by any number of means. For example, polyethylene glycol may be attached to the protein either directly or by an intervening linker. Linkerless systems for attaching polyethylene glycol to
35 proteins are described in Delgado et al., *Crit. Rev. Thera. Drug Carrier Sys.* 9:249-304 (1992); Francis et al., *Intern. J. of Hematol.* 68:1-18 (1998); U.S. Patent No. 4,002,531; U.S. Patent No.

5,349,052; WO 95/06058; and WO 98/32466, the disclosures of each of which are incorporated herein by reference.

One system for attaching polyethylene glycol directly to amino acid residues of proteins without an intervening linker employs tresylated MPEG, which is produced by the modification of monmethoxy polyethylene glycol (MPEG) using tresylchloride ($\text{ClSO}_2\text{CH}_2\text{CF}_3$). Upon reaction of protein with tresylated MPEG, polyethylene glycol is directly attached to amine groups of the protein. Thus, the invention includes protein-polyethylene glycol conjugates produced by reacting proteins of the invention with a polyethylene glycol molecule having a 2,2,2-trifluoroethane sulphonyl group.

Polyethylene glycol can also be attached to proteins using a number of different intervening linkers. For example, U.S. Patent No. 5,612,460, the entire disclosure of which is incorporated herein by reference, discloses urethane linkers for connecting polyethylene glycol to proteins. Protein-polyethylene glycol conjugates wherein the polyethylene glycol is attached to the protein by a linker can also be produced by reaction of proteins with compounds such as MPEG-succinimidylsuccinate, MPEG activated with 1,1'-carbonyldiimidazole, MPEG-2,4,5-trichloropenylcarbonate, MPEG-p-nitrophenolcarbonate, and various MPEG-succinate derivatives. A number of additional polyethylene glycol derivatives and reaction chemistries for attaching polyethylene glycol to proteins are described in International Publication No. WO 98/32466, the entire disclosure of which is incorporated herein by reference. Pegylated protein products produced using the reaction chemistries set out herein are included within the scope of the invention.

The number of polyethylene glycol moieties attached to each protein of the invention (i.e., the degree of substitution) may also vary. For example, the pegylated proteins of the invention may be linked, on average, to 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 15, 17, 20, or more polyethylene glycol molecules. Similarly, the average degree of substitution within ranges such as 1-3, 2-4, 3-5, 4-6, 5-7, 6-8, 7-9, 8-10, 9-11, 10-12, 11-13, 12-14, 13-15, 14-16, 15-17, 16-18, 17-19, or 18-20 polyethylene glycol moieties per protein molecule. Methods for determining the degree of substitution are discussed, for example, in Delgado et al., Crit. Rev. Thera. Drug Carrier Sys. 9:249-304 (1992).

The polypeptides of the invention can be recovered and purified from chemical synthesis and recombinant cell cultures by standard methods which include, but are not limited to, ammonium sulfate or ethanol precipitation, acid extraction, anion or cation exchange chromatography, phosphocellulose chromatography, hydrophobic interaction chromatography, affinity chromatography, hydroxylapatite chromatography and lectin chromatography. Most preferably, high performance liquid chromatography ("HPLC") is employed for purification. Well known techniques for refolding protein may be employed to regenerate active conformation when the polypeptide is denatured during isolation and/or purification.

The polypeptides of the invention may be in monomers or multimers (i.e., dimers, trimers, tetramers and higher multimers). Accordingly, the present invention relates to monomers and multimers of the polypeptides of the invention, their preparation, and compositions (preferably, Therapeutics) containing them. In specific embodiments, the polypeptides of the invention are monomers, dimers, trimers or tetramers. In additional embodiments, the multimers of the invention are at least dimers, at least trimers, or at least tetramers.

Multimers encompassed by the invention may be homomers or heteromers. As used herein, the term homomer refers to a multimer containing only polypeptides corresponding to a protein of the invention (e.g., the amino acid sequence of SEQ ID NO:Y, an amino acid sequence encoded by SEQ ID NO:X or the complement of SEQ ID NO:X, the amino acid sequence encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, and/or an amino acid sequence encoded by cDNA contained in ATCC Deposit No:Z (including fragments, variants, splice variants, and fusion proteins, corresponding to these as described herein)). These homomers may contain polypeptides having identical or different amino acid sequences. In a specific embodiment, a homomer of the invention is a multimer containing only polypeptides having an identical amino acid sequence. In another specific embodiment, a homomer of the invention is a multimer containing polypeptides having different amino acid sequences. In specific embodiments, the multimer of the invention is a homodimer (e.g., containing two polypeptides having identical or different amino acid sequences) or a homotrimer (e.g., containing three polypeptides having identical and/or different amino acid sequences). In additional embodiments, the homomeric multimer of the invention is at least a homodimer, at least a homotrimer, or at least a homotetramer.

As used herein, the term heteromer refers to a multimer containing one or more heterologous polypeptides (i.e., polypeptides of different proteins) in addition to the polypeptides of the invention. In a specific embodiment, the multimer of the invention is a heterodimer, a heterotrimer, or a heterotetramer. In additional embodiments, the heteromeric multimer of the invention is at least a heterodimer, at least a heterotrimer, or at least a heterotetramer.

Multimers of the invention may be the result of hydrophobic, hydrophilic, ionic and/or covalent associations and/or may be indirectly linked by, for example, liposome formation. Thus, in one embodiment, multimers of the invention, such as, for example, homodimers or homotrimers, are formed when polypeptides of the invention contact one another in solution. In another embodiment, heteromultimers of the invention, such as, for example, heterotrimers or heterotetramers, are formed when polypeptides of the invention contact antibodies to the polypeptides of the invention (including antibodies to the heterologous polypeptide sequence in a fusion protein of the invention) in solution. In other embodiments, multimers of the invention are formed by covalent associations with and/or between the polypeptides of the invention. Such covalent associations may involve one or more amino acid residues contained in the polypeptide

sequence (e.g., that recited in SEQ ID NO:Y, encoded by the portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, and/or encoded by the cDNA contained in ATCC Deposit No:Z). In one instance, the covalent associations are cross-linking between cysteine residues located within the polypeptide sequences which interact in the native (i.e., naturally occurring) polypeptide. In another instance, the covalent associations are the consequence of chemical or recombinant manipulation. Alternatively, such covalent associations may involve one or more amino acid residues contained in the heterologous polypeptide sequence in a fusion protein. In one example, covalent associations are between the heterologous sequence contained in a fusion protein of the invention (see, e.g., US Patent Number 5,478,925). In a specific example, the covalent associations are between the heterologous sequence contained in a Fc fusion protein of the invention (as described herein). In another specific example, covalent associations of fusion proteins of the invention are between heterologous polypeptide sequence from another protein that is capable of forming covalently associated multimers, such as for example, osteoprotegerin (see, e.g., International Publication NO: WO 98/49305, the contents of which are herein incorporated by reference in its entirety). In another embodiment, two or more polypeptides of the invention are joined through peptide linkers. Examples include those peptide linkers described in U.S. Pat. No. 5,073,627 (hereby incorporated by reference). Proteins comprising multiple polypeptides of the invention separated by peptide linkers may be produced using conventional recombinant DNA technology.

Another method for preparing multimer polypeptides of the invention involves use of polypeptides of the invention fused to a leucine zipper or isoleucine zipper polypeptide sequence. Leucine zipper and isoleucine zipper domains are polypeptides that promote multimerization of the proteins in which they are found. Leucine zippers were originally identified in several DNA-binding proteins (Landschulz et al., Science 240:1759, (1988)), and have since been found in a variety of different proteins. Among the known leucine zippers are naturally occurring peptides and derivatives thereof that dimerize or trimerize. Examples of leucine zipper domains suitable for producing soluble multimeric proteins of the invention are those described in PCT application WO 94/10308, hereby incorporated by reference. Recombinant fusion proteins comprising a polypeptide of the invention fused to a polypeptide sequence that dimerizes or trimerizes in solution are expressed in suitable host cells, and the resulting soluble multimeric fusion protein is recovered from the culture supernatant using techniques known in the art.

Trimeric polypeptides of the invention may offer the advantage of enhanced biological activity. Preferred leucine zipper moieties and isoleucine moieties are those that preferentially form trimers. One example is a leucine zipper derived from lung surfactant protein D (SPD), as described in Hoppe et al. (FEBS Letters 344:191, (1994)) and in U.S. patent application Ser. No. 08/446,922, hereby incorporated by reference. Other peptides derived from naturally occurring trimeric proteins may be employed in preparing trimeric polypeptides of the invention.

In another example, proteins of the invention are associated by interactions between Flag® polypeptide sequence contained in fusion proteins of the invention containing Flag® polypeptide sequence. In a further embodiment, proteins of the invention are associated by interactions between heterologous polypeptide sequence contained in Flag® fusion proteins of the invention and anti-Flag® antibody.

The multimers of the invention may be generated using chemical techniques known in the art. For example, polypeptides desired to be contained in the multimers of the invention may be chemically cross-linked using linker molecules and linker molecule length optimization techniques known in the art (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety). Additionally, multimers of the invention may be generated using techniques known in the art to form one or more inter-molecule cross-links between the cysteine residues located within the sequence of the polypeptides desired to be contained in the multimer (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety). Further, polypeptides of the invention may be routinely modified by the addition of cysteine or biotin to the C-terminus or N-terminus of the polypeptide and techniques known in the art may be applied to generate multimers containing one or more of these modified polypeptides (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety). Additionally, techniques known in the art may be applied to generate liposomes containing the polypeptide components desired to be contained in the multimer of the invention (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety).

Alternatively, multimers of the invention may be generated using genetic engineering techniques known in the art. In one embodiment, polypeptides contained in multimers of the invention are produced recombinantly using fusion protein technology described herein or otherwise known in the art (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety). In a specific embodiment, polynucleotides coding for a homodimer of the invention are generated by ligating a polynucleotide sequence encoding a polypeptide of the invention to a sequence encoding a linker polypeptide and then further to a synthetic polynucleotide encoding the translated product of the polypeptide in the reverse orientation from the original C-terminus to the N-terminus (lacking the leader sequence) (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety). In another embodiment, recombinant techniques described herein or otherwise known in the art are applied to generate recombinant polypeptides of the invention which contain a transmembrane domain (or hydrophobic or signal peptide) and which can be incorporated by membrane reconstitution techniques into liposomes (see, e.g., US Patent Number 5,478,925, which is herein incorporated by reference in its entirety).

Antibodies

Further polypeptides of the invention relate to antibodies and T-cell antigen receptors (TCR) which immunospecifically bind a polypeptide, polypeptide fragment, or variant of the invention (e.g., a polypeptide or fragment or variant of the amino acid sequence of SEQ ID NO:Y or a polypeptide encoded by the cDNA contained in ATCC Deposit No:Z, and/or an epitope, of the present invention) as determined by immunoassays well known in the art for assaying specific antibody-antigen binding. Antibodies of the invention include, but are not limited to, polyclonal, monoclonal, multispecific, human, humanized or chimeric antibodies, single chain antibodies, Fab fragments, F(ab') fragments, fragments produced by a Fab expression library, anti-idiotypic (anti-Id) antibodies (including, e.g., anti-Id antibodies to antibodies of the invention), intracellularly-made antibodies (i.e., intrabodies), and epitope-binding fragments of any of the above. The term "antibody," as used herein, refers to immunoglobulin molecules and immunologically active portions of immunoglobulin molecules, i.e., molecules that contain an antigen binding site that immunospecifically binds an antigen. The immunoglobulin molecules of the invention can be of any type (e.g., IgG, IgE, IgM, IgD, IgA and IgY), class (e.g., IgG1, IgG2, IgG3, IgG4, IgA1 and IgA2) or subclass of immunoglobulin molecule. In preferred embodiments, the immunoglobulin molecules of the invention are IgG1. In other preferred embodiments, the immunoglobulin molecules of the invention are IgG4.

Most preferably the antibodies are human antigen-binding antibody fragments of the present invention and include, but are not limited to, Fab, Fab' and F(ab')₂, Fd, single-chain Fvs (scFv), single-chain antibodies, disulfide-linked Fvs (sdFv) and fragments comprising either a VL or VH domain. Antigen-binding antibody fragments, including single-chain antibodies, may comprise the variable region(s) alone or in combination with the entirety or a portion of the following: hinge region, CH1, CH2, and CH3 domains. Also included in the invention are antigen-binding fragments also comprising any combination of variable region(s) with a hinge region, CH1, CH2, and CH3 domains. The antibodies of the invention may be from any animal origin including birds and mammals. Preferably, the antibodies are human, murine (e.g., mouse and rat), donkey, ship rabbit, goat, guinea pig, camel, horse, or chicken. As used herein, "human" antibodies include antibodies having the amino acid sequence of a human immunoglobulin and include antibodies isolated from human immunoglobulin libraries or from animals transgenic for one or more human immunoglobulin and that do not express endogenous immunoglobulins, as described infra and, for example in, U.S. Patent No. 5,939,598 by Kucherlapati et al.

The antibodies of the present invention may be monospecific, bispecific, trispecific or of greater multispecificity. Multispecific antibodies may be specific for different epitopes of a polypeptide of the present invention or may be specific for both a polypeptide of the present invention as well as for a heterologous epitope, such as a heterologous polypeptide or solid support material. See, e.g., PCT publications WO 93/17715; WO 92/08802; WO 91/00360; WO 92/05793;

Tutt, et al., J. Immunol. 147:60-69 (1991); U.S. Patent Nos. 4,474,893; 4,714,681; 4,925,648; 5,573,920; 5,601,819; Kostelny et al., J. Immunol. 148:1547-1553 (1992).

Antibodies of the present invention may be described or specified in terms of the epitope(s) or portion(s) of a polypeptide of the present invention which they recognize or specifically bind. The epitope(s) or polypeptide portion(s) may be specified as described herein, e.g., by N-terminal and C-terminal positions, or by size in contiguous amino acid residues, or listed in the Tables and Figures. Preferred epitopes of the invention include the predicted epitopes shown in column 7 of Table 1B.1, as well as polynucleotides that encode these epitopes. Antibodies which specifically bind any epitope or polypeptide of the present invention may also be excluded. Therefore, the present invention includes antibodies that specifically bind polypeptides of the present invention, and allows for the exclusion of the same.

Antibodies of the present invention may also be described or specified in terms of their cross-reactivity. Antibodies that do not bind any other analog, ortholog, or homolog of a polypeptide of the present invention are included. Antibodies that bind polypeptides with at least 95%, at least 90%, at least 85%, at least 80%, at least 75%, at least 70%, at least 65%, at least 60%, at least 55%, and at least 50% identity (as calculated using methods known in the art and described herein) to a polypeptide of the present invention are also included in the present invention. In specific embodiments, antibodies of the present invention cross-react with murine, rat and/or rabbit homologs of human proteins and the corresponding epitopes thereof. Antibodies that do not bind polypeptides with less than 95%, less than 90%, less than 85%, less than 80%, less than 75%, less than 70%, less than 65%, less than 60%, less than 55%, and less than 50% identity (as calculated using methods known in the art and described herein) to a polypeptide of the present invention are also included in the present invention. In a specific embodiment, the above-described cross-reactivity is with respect to any single specific antigenic or immunogenic polypeptide, or combination(s) of 2, 3, 4, 5, or more of the specific antigenic and/or immunogenic polypeptides disclosed herein. Further included in the present invention are antibodies which bind polypeptides encoded by polynucleotides which hybridize to a polynucleotide of the present invention under stringent hybridization conditions (as described herein). Antibodies of the present invention may also be described or specified in terms of their binding affinity to a polypeptide of the invention. Preferred binding affinities include those with a dissociation constant or K_d less than 5×10^{-2} M, 10^{-2} M, 5×10^{-3} M, 10^{-3} M, 5×10^{-4} M, 10^{-4} M, 5×10^{-5} M, 10^{-5} M, 5×10^{-6} M, 10^{-6} M, 5×10^{-7} M, 10^{-7} M, 5×10^{-8} M, 10^{-8} M, 5×10^{-9} M, 10^{-9} M, 5×10^{-10} M, 10^{-10} M, 5×10^{-11} M, 10^{-11} M, 5×10^{-12} M, 10^{-12} M, 5×10^{-13} M, 10^{-13} M, 5×10^{-14} M, 10^{-14} M, 5×10^{-15} M, or 10^{-15} M.

The invention also provides antibodies that competitively inhibit binding of an antibody to an epitope of the invention as determined by any method known in the art for determining competitive binding, for example, the immunoassays described herein. In preferred embodiments,

the antibody competitively inhibits binding to the epitope by at least 95%, at least 90%, at least 85%, at least 80%, at least 75%, at least 70%, at least 60%, or at least 50%.

Antibodies of the present invention may act as agonists or antagonists of the polypeptides of the present invention. For example, the present invention includes antibodies which disrupt the receptor/ligand interactions with the polypeptides of the invention either partially or fully. Preferably, antibodies of the present invention bind an antigenic epitope disclosed herein, or a portion thereof. The invention features both receptor-specific antibodies and ligand-specific antibodies. The invention also features receptor-specific antibodies which do not prevent ligand binding but prevent receptor activation. Receptor activation (i.e., signaling) may be determined by techniques described herein or otherwise known in the art. For example, receptor activation can be determined by detecting the phosphorylation (e.g., tyrosine or serine/threonine) of the receptor or its substrate by immunoprecipitation followed by western blot analysis (for example, as described *supra*). In specific embodiments, antibodies are provided that inhibit ligand activity or receptor activity by at least 95%, at least 90%, at least 85%, at least 80%, at least 75%, at least 70%, at least 60%, or at least 50% of the activity in absence of the antibody.

The invention also features receptor-specific antibodies which both prevent ligand binding and receptor activation as well as antibodies that recognize the receptor-ligand complex, and, preferably, do not specifically recognize the unbound receptor or the unbound ligand. Likewise, included in the invention are neutralizing antibodies which bind the ligand and prevent binding of the ligand to the receptor, as well as antibodies which bind the ligand, thereby preventing receptor activation, but do not prevent the ligand from binding the receptor. Further included in the invention are antibodies which activate the receptor. These antibodies may act as receptor agonists, i.e., potentiate or activate either all or a subset of the biological activities of the ligand-mediated receptor activation, for example, by inducing dimerization of the receptor. The antibodies may be specified as agonists, antagonists or inverse agonists for biological activities comprising the specific biological activities of the peptides of the invention disclosed herein. The above antibody agonists can be made using methods known in the art. See, e.g., PCT publication WO 96/40281; U.S. Patent No. 5,811,097; Deng et al., Blood 92(6):1981-1988 (1998); Chen et al., Cancer Res. 58(16):3668-3678 (1998); Harrop et al., J. Immunol. 161(4):1786-1794 (1998); Zhu et al., Cancer Res. 58(15):3209-3214 (1998); Yoon et al., J. Immunol. 160(7):3170-3179 (1998); Prat et al., J. Cell. Sci. 111(Pt2):237-247 (1998); Pitard et al., J. Immunol. Methods 205(2):177-190 (1997); Liautard et al., Cytokine 9(4):233-241 (1997); Carlson et al., J. Biol. Chem. 272(17):11295-11301 (1997); Taryman et al., Neuron 14(4):755-762 (1995); Muller et al., Structure 6(9):1153-1167 (1998); Bartunek et al., Cytokine 8(1):14-20 (1996) (which are all incorporated by reference herein in their entireties).

Antibodies of the present invention may be used, for example, to purify, detect, and target the polypeptides of the present invention, including both *in vitro* and *in vivo* diagnostic and

therapeutic methods. For example, the antibodies have utility in immunoassays for qualitatively and quantitatively measuring levels of the polypeptides of the present invention in biological samples. See, e.g., Harlow et al., *Antibodies: A Laboratory Manual*, (Cold Spring Harbor Laboratory Press, 2nd ed. 1988); incorporated by reference herein in its entirety.

5 As discussed in more detail below, the antibodies of the present invention may be used either alone or in combination with other compositions. The antibodies may further be recombinantly fused to a heterologous polypeptide at the N- or C-terminus or chemically conjugated (including covalent and non-covalent conjugations) to polypeptides or other compositions. For example, antibodies of the present invention may be recombinantly fused or
10 conjugated to molecules useful as labels in detection assays and effector molecules such as heterologous polypeptides, drugs, radionuclides, or toxins. See, e.g., PCT publications WO 92/08495; WO 91/14438; WO 89/12624; U.S. Patent No. 5,314,995; and EP 396,387; the disclosures of which are incorporated herein by reference in their entireties.

The antibodies of the invention include derivatives that are modified, i.e. by the covalent
15 attachment of any type of molecule to the antibody such that covalent attachment does not prevent the antibody from generating an anti-idiotypic response. For example, but not by way of limitation, the antibody derivatives include antibodies that have been modified, e.g., by glycosylation, acetylation, pegylation, phosphorylation, amidation, derivatization by known protecting/blocking groups, proteolytic cleavage, linkage to a cellular ligand or other protein, etc.
20 Any of numerous chemical modifications may be carried out by known techniques, including, but not limited to specific chemical cleavage, acetylation, formylation, metabolic synthesis of tunicamycin, etc. Additionally, the derivative may contain one or more non-classical amino acids.

The antibodies of the present invention may be generated by any suitable method known in the art. Polyclonal antibodies to an antigen-of-interest can be produced by various procedures
25 well known in the art. For example, a polypeptide of the invention can be administered to various host animals including, but not limited to, rabbits, mice, rats, etc. to induce the production of sera containing polyclonal antibodies specific for the antigen. Various adjuvants may be used to increase the immunological response, depending on the host species, and include but are not limited to, Freund's (complete and incomplete), mineral gels such as aluminum hydroxide, surface
30 active substances such as lysolecithin, pluronic polyols, polyanions, peptides, oil emulsions, keyhole limpet hemocyanins, dinitrophenol, and potentially useful human adjuvants such as BCG (bacille Calmette-Guerin) and corynebacterium parvum. Such adjuvants are also well known in the art.

Monoclonal antibodies can be prepared using a wide variety of techniques known in the
35 art including the use of hybridoma, recombinant, and phage display technologies, or a combination thereof. For example, monoclonal antibodies can be produced using hybridoma techniques including those known in the art and taught, for example, in Harlow et al., *Antibodies: A*

Laboratory Manual, (Cold Spring Harbor Laboratory Press, 2nd ed. 1988); Hammerling, et al., in: Monoclonal Antibodies and T-Cell Hybridomas 563-681 (Elsevier, N.Y., 1981) (said references incorporated by reference in their entirety). The term "monoclonal antibody" as used herein is not limited to antibodies produced through hybridoma technology. The term "monoclonal antibody" refers to an antibody that is derived from a single clone, including any eukaryotic, prokaryotic, or phage clone, and not the method by which it is produced.

Methods for producing and screening for specific antibodies using hybridoma technology are routine and well known in the art and are discussed in detail in the Examples. In a non-limiting example, mice can be immunized with a polypeptide of the invention or a cell expressing such peptide. Once an immune response is detected, e.g., antibodies specific for the antigen are detected in the mouse serum, the mouse spleen is harvested and splenocytes isolated. The splenocytes are then fused by well known techniques to any suitable myeloma cells, for example cells from cell line SP20 available from the ATCC. Hybridomas are selected and cloned by limited dilution. The hybridoma clones are then assayed by methods known in the art for cells that secrete antibodies capable of binding a polypeptide of the invention. Ascites fluid, which generally contains high levels of antibodies, can be generated by immunizing mice with positive hybridoma clones.

Accordingly, the present invention provides methods of generating monoclonal antibodies as well as antibodies produced by the method comprising culturing a hybridoma cell secreting an antibody of the invention wherein, preferably, the hybridoma is generated by fusing splenocytes isolated from a mouse immunized with an antigen of the invention with myeloma cells and then screening the hybridomas resulting from the fusion for hybridoma clones that secrete an antibody able to bind a polypeptide of the invention.

Another well known method for producing both polyclonal and monoclonal human B cell lines is transformation using Epstein Barr Virus (EBV). Protocols for generating EBV-transformed B cell lines are commonly known in the art, such as, for example, the protocol outlined in Chapter 7.22 of Current Protocols in Immunology, Coligan et al., Eds., 1994, John Wiley & Sons, NY, which is hereby incorporated in its entirety by reference. The source of B cells for transformation is commonly human peripheral blood, but B cells for transformation may also be derived from other sources including, but not limited to, lymph nodes, tonsil, spleen, tumor tissue, and infected tissues. Tissues are generally made into single cell suspensions prior to EBV transformation. Additionally, steps may be taken to either physically remove or inactivate T cells (e.g., by treatment with cyclosporin A) in B cell-containing samples, because T cells from individuals seropositive for anti-EBV antibodies can suppress B cell immortalization by EBV.

In general, the sample containing human B cells is inoculated with EBV, and cultured for 3-4 weeks. A typical source of EBV is the culture supernatant of the B95-8 cell line (ATCC #VR-1492). Physical signs of EBV transformation can generally be seen towards the end of the 3-4

week culture period. By phase-contrast microscopy, transformed cells may appear large, clear, hairy and tend to aggregate in tight clusters of cells. Initially, EBV lines are generally polyclonal. However, over prolonged periods of cell cultures, EBV lines may become monoclonal or polyclonal as a result of the selective outgrowth of particular B cell clones. Alternatively, polyclonal EBV transformed lines may be subcloned (e.g., by limiting dilution culture) or fused with a suitable fusion partner and plated at limiting dilution to obtain monoclonal B cell lines. Suitable fusion partners for EBV transformed cell lines include mouse myeloma cell lines (e.g., SP2/0, X63-Ag8.653), heteromyeloma cell lines (human x mouse; e.g., SPAM-8, SBC-H20, and CB-F7), and human cell lines (e.g., GM 1500, SKO-007, RPMI 8226, and KR-4). Thus, the present invention also provides a method of generating polyclonal or monoclonal human antibodies against polypeptides of the invention or fragments thereof, comprising EBV-transformation of human B cells.

Antibody fragments which recognize specific epitopes may be generated by known techniques. For example, Fab and F(ab')₂ fragments of the invention may be produced by proteolytic cleavage of immunoglobulin molecules, using enzymes such as papain (to produce Fab fragments) or pepsin (to produce F(ab')₂ fragments). F(ab')₂ fragments contain the variable region, the light chain constant region and the CH1 domain of the heavy chain.

For example, the antibodies of the present invention can also be generated using various phage display methods known in the art. In phage display methods, functional antibody domains are displayed on the surface of phage particles which carry the polynucleotide sequences encoding them. In a particular embodiment, such phage can be utilized to display antigen binding domains expressed from a repertoire or combinatorial antibody library (e.g., human or murine). Phage expressing an antigen binding domain that binds the antigen of interest can be selected or identified with antigen, e.g., using labeled antigen or antigen bound or captured to a solid surface or bead. Phage used in these methods are typically filamentous phage including fd and M13 binding domains expressed from phage with Fab, Fv or disulfide stabilized Fv antibody domains recombinantly fused to either the phage gene III or gene VIII protein. Examples of phage display methods that can be used to make the antibodies of the present invention include those disclosed in Brinkman et al., *J. Immunol. Methods* 182:41-50 (1995); Ames et al., *J. Immunol. Methods* 184:177-186 (1995); Kettleborough et al., *Eur. J. Immunol.* 24:952-958 (1994); Persic et al., *Gene* 187 9-18 (1997); Burton et al., *Advances in Immunology* 57:191-280 (1994); PCT application No. PCT/GB91/01134; PCT publications WO 90/02809; WO 91/10737; WO 92/01047; WO 92/18619; WO 93/11236; WO 95/15982; WO 95/20401; and U.S. Patent Nos. 5,698,426; 5,223,409; 5,403,484; 5,580,717; 5,427,908; 5,750,753; 5,821,047; 5,571,698; 5,427,908; 5,516,637; 5,780,225; 5,658,727; 5,733,743 and 5,969,108; each of which is incorporated herein by reference in its entirety.

As described in the above references, after phage selection, the antibody coding regions from the phage can be isolated and used to generate whole antibodies, including human antibodies, or any other desired antigen binding fragment, and expressed in any desired host, including mammalian cells, insect cells, plant cells, yeast, and bacteria, e.g., as described in detail below.

5 For example, techniques to recombinantly produce Fab, Fab' and F(ab')₂ fragments can also be employed using methods known in the art such as those disclosed in PCT publication WO 92/22324; Mullinax et al., *BioTechniques* 12(6):864-869 (1992); and Sawai et al., *AJRI* 34:26-34 (1995); and Better et al., *Science* 240:1041-1043 (1988) (said references incorporated by reference in their entireties).

10 Examples of techniques which can be used to produce single-chain Fvs and antibodies include those described in U.S. Patents 4,946,778 and 5,258,498; Huston et al., *Methods in Enzymology* 203:46-88 (1991); Shu et al., *PNAS* 90:7995-7999 (1993); and Skerra et al., *Science* 240:1038-1040 (1988). For some uses, including *in vivo* use of antibodies in humans and *in vitro* detection assays, it may be preferable to use chimeric, humanized, or human antibodies. A
15 chimeric antibody is a molecule in which different portions of the antibody are derived from different animal species, such as antibodies having a variable region derived from a murine monoclonal antibody and a human immunoglobulin constant region. Methods for producing chimeric antibodies are known in the art. See e.g., Morrison, *Science* 229:1202 (1985); Oi et al., *BioTechniques* 4:214 (1986); Gillies et al., (1989) *J. Immunol. Methods* 125:191-202; U.S. Patent
20 Nos. 5,807,715; 4,816,567; and 4,816,397, which are incorporated herein by reference in their entirety. Humanized antibodies are antibody molecules from non-human species antibody that binds the desired antigen having one or more complementarity determining regions (CDRs) from the non-human species and a framework regions from a human immunoglobulin molecule. Often, framework residues in the human framework regions will be substituted with the corresponding
25 residue from the CDR donor antibody to alter, preferably improve, antigen binding. These framework substitutions are identified by methods well known in the art, e.g., by modeling of the interactions of the CDR and framework residues to identify framework residues important for antigen binding and sequence comparison to identify unusual framework residues at particular positions. (See, e.g., Queen et al., U.S. Patent No. 5,585,089; Riechmann et al., *Nature* 332:323
30 (1988), which are incorporated herein by reference in their entireties.) Antibodies can be humanized using a variety of techniques known in the art including, for example, CDR-grafting (EP 239,400; PCT publication WO 91/09967; U.S. Patent Nos. 5,225,539; 5,530,101; and 5,585,089), veneering or resurfacing (EP 592,106; EP 519,596; Padlan, *Molecular Immunology* 28(4/5):489-498 (1991); Studnicka et al., *Protein Engineering* 7(6):805-814 (1994); Roguska. et al., *PNAS* 91:969-973 (1994)), and chain shuffling (U.S. Patent No. 5,565,332).
35

Completely human antibodies are particularly desirable for therapeutic treatment of human patients. Human antibodies can be made by a variety of methods known in the art including phage

display methods described above using antibody libraries derived from human immunoglobulin sequences. See also, U.S. Patent Nos. 4,444,887 and 4,716,111; and PCT publications WO 98/46645, WO 98/50433, WO 98/24893, WO 98/16654, WO 96/34096, WO 96/33735, and WO 91/10741; each of which is incorporated herein by reference in its entirety.

5 Human antibodies can also be produced using transgenic mice which are incapable of expressing functional endogenous immunoglobulins, but which can express human immunoglobulin genes. For example, the human heavy and light chain immunoglobulin gene complexes may be introduced randomly or by homologous recombination into mouse embryonic stem cells. Alternatively, the human variable region, constant region, and diversity region may be
10 introduced into mouse embryonic stem cells in addition to the human heavy and light chain genes. The mouse heavy and light chain immunoglobulin genes may be rendered non-functional separately or simultaneously with the introduction of human immunoglobulin loci by homologous recombination. In particular, homozygous deletion of the JH region prevents endogenous antibody production. The modified embryonic stem cells are expanded and microinjected into blastocysts
15 to produce chimeric mice. The chimeric mice are then bred to produce homozygous offspring which express human antibodies. The transgenic mice are immunized in the normal fashion with a selected antigen, e.g., all or a portion of a polypeptide of the invention. Monoclonal antibodies directed against the antigen can be obtained from the immunized, transgenic mice using conventional hybridoma technology. The human immunoglobulin transgenes harbored by the
20 transgenic mice rearrange during B cell differentiation, and subsequently undergo class switching and somatic mutation. Thus, using such a technique, it is possible to produce therapeutically useful IgG, IgA, IgM and IgE antibodies. For an overview of this technology for producing human antibodies, see Lonberg and Huszar, *Int. Rev. Immunol.* 13:65-93 (1995). For a detailed discussion of this technology for producing human antibodies and human monoclonal antibodies and protocols for producing such antibodies, see, e.g., PCT publications WO 98/24893; WO
25 92/01047; WO 96/34096; WO 96/33735; European Patent No. 0 598 877; U.S. Patent Nos. 5,413,923; 5,625,126; 5,633,425; 5,569,825; 5,661,016; 5,545,806; 5,814,318; 5,885,793; 5,916,771; 5,939,598; 6,075,181; and 6,114,598, which are incorporated by reference herein in their entirety. In addition, companies such as Abgenix, Inc. (Freemont, CA) and Genpharm (San
30 Jose, CA) can be engaged to provide human antibodies directed against a selected antigen using technology similar to that described above.

Completely human antibodies which recognize a selected epitope can be generated using a technique referred to as "guided selection." In this approach a selected non-human monoclonal antibody, e.g., a mouse antibody, is used to guide the selection of a completely human antibody
35 recognizing the same epitope. (Jespers et al., *Bio/technology* 12:899-903 (1988)).

Further, antibodies to the polypeptides of the invention can, in turn, be utilized to generate anti-idiotypic antibodies that "mimic" polypeptides of the invention using techniques well known

to those skilled in the art. (See, e.g., Greenspan & Bona, FASEB J. 7(5):437-444; (1989) and Nissinoff, J. Immunol. 147(8):2429-2438 (1991)). For example, antibodies which bind to and competitively inhibit polypeptide multimerization and/or binding of a polypeptide of the invention to a ligand can be used to generate anti-idiotypes that "mimic" the polypeptide multimerization and/or binding domain and, as a consequence, bind to and neutralize polypeptide and/or its ligand. Such neutralizing anti-idiotypes or Fab fragments of such anti-idiotypes can be used in therapeutic regimens to neutralize polypeptide ligand(s)/receptor(s). For example, such anti-idiotypic antibodies can be used to bind a polypeptide of the invention and/or to bind its ligand(s)/receptor(s), and thereby block its biological activity. Alternatively, antibodies which bind to and enhance polypeptide multimerization and/or binding, and/or receptor/ligand multimerization, binding and/or signaling can be used to generate anti-idiotypes that function as agonists of a polypeptide of the invention and/or its ligand/receptor. Such agonistic anti-idiotypes or Fab fragments of such anti-idiotypes can be used in therapeutic regimens as agonists of the polypeptides of the invention or its ligand(s)/receptor(s). For example, such anti-idiotypic antibodies can be used to bind a polypeptide of the invention and/or to bind its ligand(s)/receptor(s), and thereby promote or enhance its biological activity.

Intrabodies of the invention can be produced using methods known in the art, such as those disclosed and reviewed in Chen et al., Hum. Gene Ther. 5:595-601 (1994); Marasco, W.A., Gene Ther. 4:11-15 (1997); Rondon and Marasco, Annu. Rev. Microbiol. 51:257-283 (1997); Proba et al., J. Mol. Biol. 275:245-253 (1998); Cohen et al., Oncogene 17:2445-2456 (1998); Ohage and Steipe, J. Mol. Biol. 291:1119-1128 (1999); Ohage et al., J. Mol. Biol. 291:1129-1134 (1999); Wirtz and Steipe, Protein Sci. 8:2245-2250 (1999); Zhu et al., J. Immunol. Methods 231:207-222 (1999); and references cited therein.

Polynucleotides Encoding Antibodies

The invention further provides polynucleotides comprising a nucleotide sequence encoding an antibody of the invention and fragments thereof. The invention also encompasses polynucleotides that hybridize under stringent or alternatively, under lower stringency hybridization conditions, e.g., as defined *supra*, to polynucleotides that encode an antibody, preferably, that specifically binds to a polypeptide of the invention, preferably, an antibody that binds to a polypeptide having the amino acid sequence of SEQ ID NO:Y, to a polypeptide encoded by a portion of SEQ ID NO:X as defined in columns 8 and 9 of Table 2, and/or to a polypeptide encoded by the cDNA contained in ATCC Deposit No:Z.

The polynucleotides may be obtained, and the nucleotide sequence of the polynucleotides determined, by any method known in the art. For example, if the nucleotide sequence of the antibody is known, a polynucleotide encoding the antibody may be assembled from chemically synthesized oligonucleotides (e.g., as described in Kutmeier et al., BioTechniques 17:242 (1994)),

which, briefly, involves the synthesis of overlapping oligonucleotides containing portions of the sequence encoding the antibody; annealing and ligating of those oligonucleotides, and then amplification of the ligated oligonucleotides by PCR.

Alternatively, a polynucleotide encoding an antibody may be generated from nucleic acid
5 from a suitable source. If a clone containing a nucleic acid encoding a particular antibody is not available, but the sequence of the antibody molecule is known, a nucleic acid encoding the immunoglobulin may be chemically synthesized or obtained from a suitable source (e.g., an antibody cDNA library, or a cDNA library generated from, or nucleic acid, preferably poly A+ RNA, isolated from, any tissue or cells expressing the antibody, such as hybridoma cells selected
10 to express an antibody of the invention) by PCR amplification using synthetic primers hybridizable to the 3' and 5' ends of the sequence or by cloning using an oligonucleotide probe specific for the particular gene sequence to identify, e.g., a cDNA clone from a cDNA library that encodes the antibody. Amplified nucleic acids generated by PCR may then be cloned into replicable cloning vectors using any method well known in the art.

15 Once the nucleotide sequence and corresponding amino acid sequence of the antibody is determined, the nucleotide sequence of the antibody may be manipulated using methods well known in the art for the manipulation of nucleotide sequences, e.g., recombinant DNA techniques, site directed mutagenesis, PCR, etc. (see, for example, the techniques described in Sambrook et al., 1990, Molecular Cloning, A Laboratory Manual, 2d Ed., Cold Spring Harbor Laboratory, Cold
20 Spring Harbor, NY and Ausubel et al., eds., 1998, Current Protocols in Molecular Biology, John Wiley & Sons, NY, which are both incorporated by reference herein in their entireties), to generate antibodies having a different amino acid sequence, for example to create amino acid substitutions, deletions, and/or insertions.

In a specific embodiment, the amino acid sequence of the heavy and/or light chain
25 variable domains may be inspected to identify the sequences of the complementarity determining regions (CDRs) by methods that are well known in the art, e.g., by comparison to known amino acid sequences of other heavy and light chain variable regions to determine the regions of sequence hypervariability. Using routine recombinant DNA techniques, one or more of the CDRs may be inserted within framework regions, e.g., into human framework regions to humanize a
30 non-human antibody, as described *supra*. The framework regions may be naturally occurring or consensus framework regions, and preferably human framework regions (see, e.g., Chothia et al., J. Mol. Biol. 278: 457-479 (1998) for a listing of human framework regions). Preferably, the polynucleotide generated by the combination of the framework regions and CDRs encodes an antibody that specifically binds a polypeptide of the invention. Preferably, as discussed *supra*,
35 one or more amino acid substitutions may be made within the framework regions, and, preferably, the amino acid substitutions improve binding of the antibody to its antigen. Additionally, such methods may be used to make amino acid substitutions or deletions of one or more variable region

cysteine residues participating in an intrachain disulfide bond to generate antibody molecules lacking one or more intrachain disulfide bonds. Other alterations to the polynucleotide are encompassed by the present invention and within the skill of the art.

In addition, techniques developed for the production of "chimeric antibodies" (Morrison et al., Proc. Natl. Acad. Sci. 81:851-855 (1984); Neuberger et al., Nature 312:604-608 (1984); Takeda et al., Nature 314:452-454 (1985)) by splicing genes from a mouse antibody molecule of appropriate antigen specificity together with genes from a human antibody molecule of appropriate biological activity can be used. As described *supra*, a chimeric antibody is a molecule in which different portions are derived from different animal species, such as those having a variable region derived from a murine mAb and a human immunoglobulin constant region, e.g., humanized antibodies.

Alternatively, techniques described for the production of single chain antibodies (U.S. Patent No. 4,946,778; Bird, Science 242:423-42 (1988); Huston et al., Proc. Natl. Acad. Sci. USA 85:5879-5883 (1988); and Ward et al., Nature 334:544-54 (1989)) can be adapted to produce single chain antibodies. Single chain antibodies are formed by linking the heavy and light chain fragments of the Fv region via an amino acid bridge, resulting in a single chain polypeptide. Techniques for the assembly of functional Fv fragments in *E. coli* may also be used (Skerra et al., Science 242:1038-1041 (1988)).

Methods of Producing Antibodies

The antibodies of the invention can be produced by any method known in the art for the synthesis of antibodies, in particular, by chemical synthesis or preferably, by recombinant expression techniques. Methods of producing antibodies include, but are not limited to, hybridoma technology, EBV transformation, and other methods discussed herein as well as through the use of recombinant DNA technology, as discussed below.

Recombinant expression of an antibody of the invention, or fragment, derivative or analog thereof, (e.g., a heavy or light chain of an antibody of the invention or a single chain antibody of the invention), requires construction of an expression vector containing a polynucleotide that encodes the antibody. Once a polynucleotide encoding an antibody molecule or a heavy or light chain of an antibody, or portion thereof (preferably containing the heavy or light chain variable domain), of the invention has been obtained, the vector for the production of the antibody molecule may be produced by recombinant DNA technology using techniques well known in the art. Thus, methods for preparing a protein by expressing a polynucleotide containing an antibody encoding nucleotide sequence are described herein. Methods which are well known to those skilled in the art can be used to construct expression vectors containing antibody coding sequences and appropriate transcriptional and translational control signals. These methods include, for example, *in vitro* recombinant DNA techniques, synthetic techniques, and *in vivo*

genetic recombination. The invention, thus, provides replicable vectors comprising a nucleotide sequence encoding an antibody molecule of the invention, or a heavy or light chain thereof, or a heavy or light chain variable domain, operably linked to a promoter. Such vectors may include the nucleotide sequence encoding the constant region of the antibody molecule (see, e.g., PCT
5 Publication WO 86/05807; PCT Publication WO 89/01036; and U.S. Patent No. 5,122,464) and the variable domain of the antibody may be cloned into such a vector for expression of the entire heavy or light chain.

The expression vector is transferred to a host cell by conventional techniques and the transfected cells are then cultured by conventional techniques to produce an antibody of the
10 invention. Thus, the invention includes host cells containing a polynucleotide encoding an antibody of the invention, or a heavy or light chain thereof, or a single chain antibody of the invention, operably linked to a heterologous promoter. In preferred embodiments for the expression of double-chained antibodies, vectors encoding both the heavy and light chains may be co-expressed in the host cell for expression of the entire immunoglobulin molecule, as detailed
15 below.

A variety of host-expression vector systems may be utilized to express the antibody molecules of the invention. Such host-expression systems represent vehicles by which the coding sequences of interest may be produced and subsequently purified, but also represent cells which may, when transformed or transfected with the appropriate nucleotide coding sequences, express
20 an antibody molecule of the invention in situ. These include but are not limited to microorganisms such as bacteria (e.g., *E. coli*, *B. subtilis*) transformed with recombinant bacteriophage DNA, plasmid DNA or cosmid DNA expression vectors containing antibody coding sequences; yeast (e.g., *Saccharomyces*, *Pichia*) transformed with recombinant yeast expression vectors containing antibody coding sequences; insect cell systems infected with
25 recombinant virus expression vectors (e.g., baculovirus) containing antibody coding sequences; plant cell systems infected with recombinant virus expression vectors (e.g., cauliflower mosaic virus, CaMV; tobacco mosaic virus, TMV) or transformed with recombinant plasmid expression vectors (e.g., Ti plasmid) containing antibody coding sequences; or mammalian cell systems (e.g., COS, CHO, BHK, 293, 3T3 cells) harboring recombinant expression constructs containing
30 promoters derived from the genome of mammalian cells (e.g., metallothionein promoter) or from mammalian viruses (e.g., the adenovirus late promoter; the vaccinia virus 7.5K promoter). Preferably, bacterial cells such as *Escherichia coli*, and more preferably, eukaryotic cells, especially for the expression of whole recombinant antibody molecule, are used for the expression of a recombinant antibody molecule. For example, mammalian cells such as Chinese hamster
35 ovary cells (CHO), in conjunction with a vector such as the major intermediate early gene promoter element from human cytomegalovirus is an effective expression system for antibodies (Foecking et al., *Gene* 45:101 (1986); Cockett et al., *Bio/Technology* 8:2 (1990)).

In bacterial systems, a number of expression vectors may be advantageously selected depending upon the use intended for the antibody molecule being expressed. For example, when a large quantity of such a protein is to be produced, for the generation of pharmaceutical compositions of an antibody molecule, vectors which direct the expression of high levels of fusion protein products that are readily purified may be desirable. Such vectors include, but are not limited, to the *E. coli* expression vector pUR278 (Ruther et al., EMBO J. 2:1791 (1983)), in which the antibody coding sequence may be ligated individually into the vector in frame with the lac Z coding region so that a fusion protein is produced; pIN vectors (Inouye & Inouye, Nucleic Acids Res. 13:3101-3109 (1985); Van Heeke & Schuster, J. Biol. Chem. 24:5503-5509 (1989)); and the like. pGEX vectors may also be used to express foreign polypeptides as fusion proteins with glutathione S-transferase (GST). In general, such fusion proteins are soluble and can easily be purified from lysed cells by adsorption and binding to matrix glutathione-agarose beads followed by elution in the presence of free glutathione. The pGEX vectors are designed to include thrombin or factor Xa protease cleavage sites so that the cloned target gene product can be released from the GST moiety.

In an insect system, Autographa californica nuclear polyhedrosis virus (AcNPV) is used as a vector to express foreign genes. The virus grows in *Spodoptera frugiperda* cells. The antibody coding sequence may be cloned individually into non-essential regions (for example the polyhedrin gene) of the virus and placed under control of an AcNPV promoter (for example the polyhedrin promoter).

In mammalian host cells, a number of viral-based expression systems may be utilized. In cases where an adenovirus is used as an expression vector, the antibody coding sequence of interest may be ligated to an adenovirus transcription/translation control complex, e.g., the late promoter and tripartite leader sequence. This chimeric gene may then be inserted in the adenovirus genome by *in vitro* or *in vivo* recombination. Insertion in a non-essential region of the viral genome (e.g., region E1 or E3) will result in a recombinant virus that is viable and capable of expressing the antibody molecule in infected hosts. (e.g., see Logan & Shenk, Proc. Natl. Acad. Sci. USA 81:355-359 (1984)). Specific initiation signals may also be required for efficient translation of inserted antibody coding sequences. These signals include the ATG initiation codon and adjacent sequences. Furthermore, the initiation codon must be in phase with the reading frame of the desired coding sequence to ensure translation of the entire insert. These exogenous translational control signals and initiation codons can be of a variety of origins, both natural and synthetic. The efficiency of expression may be enhanced by the inclusion of appropriate transcription enhancer elements, transcription terminators, etc. (see Bittner et al., Methods in Enzymol. 153:51-544 (1987)).

In addition, a host cell strain may be chosen which modulates the expression of the inserted sequences, or modifies and processes the gene product in the specific fashion desired.

Such modifications (e.g., glycosylation) and processing (e.g., cleavage) of protein products may be important for the function of the protein. Different host cells have characteristic and specific mechanisms for the post-translational processing and modification of proteins and gene products. Appropriate cell lines or host systems can be chosen to ensure the correct modification and processing of the foreign protein expressed. To this end, eukaryotic host cells which possess the cellular machinery for proper processing of the primary transcript, glycosylation, and phosphorylation of the gene product may be used. Such mammalian host cells include but are not limited to CHO, VERY, BHK, HeLa, COS, MDCK, 293, 3T3, WI38, and in particular, breast cancer cell lines such as, for example, BT483, Hs578T, HTB2, BT20 and T47D, and normal mammary gland cell line such as, for example, CRL7030 and Hs578Bst.

For long-term, high-yield production of recombinant proteins, stable expression is preferred. For example, cell lines which stably express the antibody molecule may be engineered. Rather than using expression vectors which contain viral origins of replication, host cells can be transformed with DNA controlled by appropriate expression control elements (e.g., promoter, enhancer, sequences, transcription terminators, polyadenylation sites, etc.), and a selectable marker. Following the introduction of the foreign DNA, engineered cells may be allowed to grow for 1-2 days in an enriched media, and then are switched to a selective media. The selectable marker in the recombinant plasmid confers resistance to the selection and allows cells to stably integrate the plasmid into their chromosomes and grow to form foci which in turn can be cloned and expanded into cell lines. This method may advantageously be used to engineer cell lines which express the antibody molecule. Such engineered cell lines may be particularly useful in screening and evaluation of compounds that interact directly or indirectly with the antibody molecule.

A number of selection systems may be used, including but not limited to the herpes simplex virus thymidine kinase (Wigler et al., Cell 11:223 (1977)), hypoxanthine-guanine phosphoribosyltransferase (Szybalska & Szybalski, Proc. Natl. Acad. Sci. USA 48:202 (1992)), and adenine phosphoribosyltransferase (Lowy et al., Cell 22:817 (1980)) genes can be employed in tk-, hgp^rt- or ap^rt- cells, respectively. Also, antimetabolite resistance can be used as the basis of selection for the following genes: dhfr, which confers resistance to methotrexate (Wigler et al., Natl. Acad. Sci. USA 77:357 (1980); O'Hare et al., Proc. Natl. Acad. Sci. USA 78:1527 (1981)); gpt, which confers resistance to mycophenolic acid (Mulligan & Berg, Proc. Natl. Acad. Sci. USA 78:2072 (1981)); neo, which confers resistance to the aminoglycoside G-418 Clinical Pharmacy 12:488-505; Wu and Wu, Biotherapy 3:87-95 (1991); Tolstoshev, Ann. Rev. Pharmacol. Toxicol. 32:573-596 (1993); Mulligan, Science 260:926-932 (1993); and Morgan and Anderson, Ann. Rev. Biochem. 62:191-217 (1993); May, 1993, TIB TECH 11(5):155-215 (1993); and hyg^ro, which confers resistance to hygromycin (Santerre et al., Gene 30:147 (1984)). Methods commonly known in the art of recombinant DNA technology may be routinely applied to select the desired

recombinant clone, and such methods are described, for example, in Ausubel et al. (eds.), *Current Protocols in Molecular Biology*, John Wiley & Sons, NY (1993); Kriegler, *Gene Transfer and Expression, A Laboratory Manual*, Stockton Press, NY (1990); and in Chapters 12 and 13, Dracopoli et al. (eds), *Current Protocols in Human Genetics*, John Wiley & Sons, NY (1994);
5 Colberre-Garapin et al., *J. Mol. Biol.* 150:1 (1981), which are incorporated by reference herein in their entireties.

The expression levels of an antibody molecule can be increased by vector amplification (for a review, see Bebbington and Hentschel, *The use of vectors based on gene amplification for the expression of cloned genes in mammalian cells in DNA cloning*, Vol.3. (Academic Press, New
10 York, 1987)). When a marker in the vector system expressing antibody is amplifiable, increase in the level of inhibitor present in culture of host cell will increase the number of copies of the marker gene. Since the amplified region is associated with the antibody gene, production of the antibody will also increase (Crouse et al., *Mol. Cell. Biol.* 3:257 (1983)).

Vectors which use glutamine synthase (GS) or DHFR as the selectable markers can be
15 amplified in the presence of the drugs methionine sulfoximine or methotrexate, respectively. An advantage of glutamine synthase based vectors are the availability of cell lines (e.g., the murine myeloma cell line, NS0) which are glutamine synthase negative. Glutamine synthase expression systems can also function in glutamine synthase expressing cells (e.g. Chinese Hamster Ovary (CHO) cells) by providing additional inhibitor to prevent the functioning of the endogenous gene.
20 A glutamine synthase expression system and components thereof are detailed in PCT publications: WO87/04462; WO86/05807; WO89/01036; WO89/10404; and WO91/06657 which are incorporated in their entireties by reference herein. Additionally, glutamine synthase expression vectors that may be used according to the present invention are commercially available from suppliers, including, for example Lonza Biologics, Inc. (Portsmouth, NH). Expression and
25 production of monoclonal antibodies using a GS expression system in murine myeloma cells is described in Bebbington *et al.*, *Bio/technology* 10:169(1992) and in Biblia and Robinson *Biotechnol. Prog.* 11:1 (1995) which are incorporated in their entireties by reference herein.

The host cell may be co-transfected with two expression vectors of the invention, the first vector encoding a heavy chain derived polypeptide and the second vector encoding a light chain
30 derived polypeptide. The two vectors may contain identical selectable markers which enable equal expression of heavy and light chain polypeptides. Alternatively, a single vector may be used which encodes, and is capable of expressing, both heavy and light chain polypeptides. In such situations, the light chain should be placed before the heavy chain to avoid an excess of toxic free heavy chain (Proudfoot, *Nature* 322:52 (1986); Kohler, *Proc. Natl. Acad. Sci. USA* 77:2197
35 (1980)). The coding sequences for the heavy and light chains may comprise cDNA or genomic DNA.

Once an antibody molecule of the invention has been produced by an animal, chemically synthesized, or recombinantly expressed, it may be purified by any method known in the art for purification of an immunoglobulin molecule, for example, by chromatography (e.g., ion exchange, affinity, particularly by affinity for the specific antigen after Protein A, and sizing column chromatography), centrifugation, differential solubility, or by any other standard technique for the purification of proteins. In addition, the antibodies of the present invention or fragments thereof can be fused to heterologous polypeptide sequences described herein or otherwise known in the art, to facilitate purification.

The present invention encompasses antibodies recombinantly fused or chemically conjugated (including both covalently and non-covalently conjugations) to a polypeptide (or portion thereof, preferably at least 10, 20, 30, 40, 50, 60, 70, 80, 90 or 100 amino acids of the polypeptide) of the present invention to generate fusion proteins. The fusion does not necessarily need to be direct, but may occur through linker sequences. The antibodies may be specific for antigens other than polypeptides (or portion thereof, preferably at least 10, 20, 30, 40, 50, 60, 70, 80, 90 or 100 amino acids of the polypeptide) of the present invention. For example, antibodies may be used to target the polypeptides of the present invention to particular cell types, either in vitro or *in vivo*, by fusing or conjugating the polypeptides of the present invention to antibodies specific for particular cell surface receptors. Antibodies fused or conjugated to the polypeptides of the present invention may also be used in in vitro immunoassays and purification methods using methods known in the art. See e.g., Harbor et al., *supra*, and PCT publication WO 93/21232; EP 439,095; Naramura et al., *Immunol. Lett.* 39:91-99 (1994); U.S. Patent 5,474,981; Gillies et al., *PNAS* 89:1428-1432 (1992); Fell et al., *J. Immunol.* 146:2446-2452 (1991), which are incorporated by reference in their entireties.

The present invention further includes compositions comprising the polypeptides of the present invention fused or conjugated to antibody domains other than the variable regions. For example, the polypeptides of the present invention may be fused or conjugated to an antibody Fc region, or portion thereof. The antibody portion fused to a polypeptide of the present invention may comprise the constant region, hinge region, CH1 domain, CH2 domain, and CH3 domain or any combination of whole domains or portions thereof. The polypeptides may also be fused or conjugated to the above antibody portions to form multimers. For example, Fc portions fused to the polypeptides of the present invention can form dimers through disulfide bonding between the Fc portions. Higher multimeric forms can be made by fusing the polypeptides to portions of IgA and IgM. Methods for fusing or conjugating the polypeptides of the present invention to antibody portions are known in the art. See, e.g., U.S. Patent Nos. 5,336,603; 5,622,929; 5,359,046; 5,349,053; 5,447,851; 5,112,946; EP 307,434; EP 367,166; PCT publications WO 96/04388; WO 91/06570; Ashkenazi et al., *Proc. Natl. Acad. Sci. USA* 88:10535-10539 (1991); Zheng et al., *J.*

Immunol. 154:5590-5600 (1995); and Vil et al., Proc. Natl. Acad. Sci. USA 89:11337- 11341 (1992) (said references incorporated by reference in their entireties).

As discussed, *supra*, the polypeptides corresponding to a polypeptide, polypeptide fragment, or a variant of SEQ ID NO:Y may be fused or conjugated to the above antibody portions to increase the *in vivo* half life of the polypeptides or for use in immunoassays using methods known in the art. Further, the polypeptides corresponding to SEQ ID NO:Y may be fused or conjugated to the above antibody portions to facilitate purification. One reported example describes chimeric proteins consisting of the first two domains of the human CD4-polypeptide and various domains of the constant regions of the heavy or light chains of mammalian immunoglobulins. See EP 394,827; and Trauneker et al., Nature 331:84-86 (1988). The polypeptides of the present invention fused or conjugated to an antibody having disulfide-linked dimeric structures (due to the IgG) may also be more efficient in binding and neutralizing other molecules, than the monomeric secreted protein or protein fragment alone. See, for example, Fountoulakis et al., J. Biochem. 270:3958-3964 (1995). In many cases, the Fc part in a fusion protein is beneficial in therapy and diagnosis, and thus can result in, for example, improved pharmacokinetic properties. See, for example, EP A 232,262. Alternatively, deleting the Fc part after the fusion protein has been expressed, detected, and purified, would be desired. For example, the Fc portion may hinder therapy and diagnosis if the fusion protein is used as an antigen for immunizations. In drug discovery, for example, human proteins, such as hIL-5, have been fused with Fc portions for the purpose of high-throughput screening assays to identify antagonists of hIL-5. (See, Bennett et al., J. Molecular Recognition 8:52-58 (1995); Johanson et al., J. Biol. Chem. 270:9459-9471 (1995)).

Moreover, the antibodies or fragments thereof of the present invention can be fused to marker sequences, such as a peptide to facilitate purification. In preferred embodiments, the marker amino acid sequence is a hexa-histidine peptide, such as the tag provided in a pQE vector (QIAGEN, Inc., 9259 Eton Avenue, Chatsworth, CA, 91311), among others, many of which are commercially available. As described in Gentz et al., Proc. Natl. Acad. Sci. USA 86:821-824 (1989), for instance, hexa-histidine provides for convenient purification of the fusion protein. Other peptide tags useful for purification include, but are not limited to, the "HA" tag, which corresponds to an epitope derived from the influenza hemagglutinin protein (Wilson et al., Cell 37:767 (1984)) and the "flag" tag.

The present invention further encompasses antibodies or fragments thereof conjugated to a diagnostic or therapeutic agent. The antibodies can be used diagnostically to, for example, monitor the development or progression of a tumor as part of a clinical testing procedure to, e.g., determine the efficacy of a given treatment regimen. Detection can be facilitated by coupling the antibody to a detectable substance. Examples of detectable substances include various enzymes, prosthetic groups, fluorescent materials, luminescent materials, bioluminescent materials,

radioactive materials, positron emitting metals using various positron emission tomographies, and nonradioactive paramagnetic metal ions. The detectable substance may be coupled or conjugated either directly to the antibody (or fragment thereof) or indirectly, through an intermediate (such as, for example, a linker known in the art) using techniques known in the art. See, for example, U.S. Patent No. 4,741,900 for metal ions which can be conjugated to antibodies for use as diagnostics according to the present invention. Examples of suitable enzymes include horseradish peroxidase, alkaline phosphatase, beta-galactosidase, or acetylcholinesterase; examples of suitable prosthetic group complexes include streptavidin/biotin and avidin/biotin; examples of suitable fluorescent materials include umbelliferone, fluorescein, fluorescein isothiocyanate, rhodamine, dichlorotriazinylamine fluorescein, dansyl chloride or phycoerythrin; an example of a luminescent material includes luminol; examples of bioluminescent materials include luciferase, luciferin, and aequorin; and examples of suitable radioactive material include ^{125}I , ^{131}I , ^{111}In or ^{99}Tc .

Further, an antibody or fragment thereof may be conjugated to a therapeutic moiety such as a cytotoxin, e.g., a cytostatic or cytotoxic agent, a therapeutic agent or a radioactive metal ion, e.g., alpha-emitters such as, for example, ^{213}Bi . A cytotoxin or cytotoxic agent includes any agent that is detrimental to cells. Examples include paclitaxol, cytochalasin B, gramicidin D, ethidium bromide, emetine, mitomycin, etoposide, teniposide, vincristine, vinblastine, colchicin, doxorubicin, daunorubicin, dihydroxy anthracin dione, mitoxantrone, mithramycin, actinomycin D, 1-dehydrotestosterone, glucocorticoids, procaine, tetracaine, lidocaine, propranolol, and puromycin and analogs or homologs thereof. Therapeutic agents include, but are not limited to, antimetabolites (e.g., methotrexate, 6-mercaptopurine, 6-thioguanine, cytarabine, 5-fluorouracil decarbazine), alkylating agents (e.g., mechlorethamine, thioepa chlorambucil, melphalan, carmustine (BSNU) and lomustine (CCNU), cyclophosphamide, busulfan, dibromomannitol, streptozotocin, mitomycin C, and cis-dichlorodiamine platinum (II) (DDP) cisplatin), anthracyclines (e.g., daunorubicin (formerly daunomycin) and doxorubicin), antibiotics (e.g., dactinomycin (formerly actinomycin), bleomycin, mithramycin, and anthramycin (AMC)), and anti-mitotic agents (e.g., vincristine and vinblastine).

The conjugates of the invention can be used for modifying a given biological response, the therapeutic agent or drug moiety is not to be construed as limited to classical chemical therapeutic agents. For example, the drug moiety may be a protein or polypeptide possessing a desired biological activity. Such proteins may include, for example, a toxin such as abrin, ricin A, pseudomonas exotoxin, or diphtheria toxin; a protein such as tumor necrosis factor, α -interferon, β -interferon, nerve growth factor, platelet derived growth factor, tissue plasminogen activator, an apoptotic agent, e.g., TNF- α , TNF- β , AIM I (See, International Publication No. WO 97/33899), AIM II (See, International Publication No. WO 97/34911), Fas Ligand (Takahashi *et al.*, *Int. Immunol.*, 6:1567-1574 (1994)), VEGF (See, International Publication No. WO 99/23105), a thrombotic agent or an anti-angiogenic agent, e.g., angiostatin or endostatin; or, biological

response modifiers such as, for example, lymphokines, interleukin-1 ("IL-1"), interleukin-2 ("IL-2"), interleukin-6 ("IL-6"), granulocyte macrophage colony stimulating factor ("GM-CSF"), granulocyte colony stimulating factor ("G-CSF"), or other growth factors.

Antibodies may also be attached to solid supports, which are particularly useful for
5 immunoassays or purification of the target antigen. Such solid supports include, but are not limited to, glass, cellulose, polyacrylamide, nylon, polystyrene, polyvinyl chloride or polypropylene.

Techniques for conjugating such therapeutic moiety to antibodies are well known. See, for example, Arnon et al., "Monoclonal Antibodies For Immunotargeting Of Drugs In Cancer
10 Therapy", in *Monoclonal Antibodies And Cancer Therapy*, Reisfeld et al. (eds.), pp. 243-56 (Alan R. Liss, Inc. 1985); Hellstrom et al., "Antibodies For Drug Delivery", in *Controlled Drug Delivery* (2nd Ed.), Robinson et al. (eds.), pp. 623-53 (Marcel Dekker, Inc. 1987); Thorpe, "Antibody Carriers Of Cytotoxic Agents In Cancer Therapy: A Review", in *Monoclonal Antibodies '84: Biological And Clinical Applications*, Pinchera et al. (eds.), pp. 475-506 (1985);
15 "Analysis, Results, And Future Prospective Of The Therapeutic Use Of Radiolabeled Antibody In Cancer Therapy", in *Monoclonal Antibodies For Cancer Detection And Therapy*, Baldwin et al. (eds.), pp. 303-16 (Academic Press 1985), and Thorpe et al., "The Preparation And Cytotoxic Properties Of Antibody-Toxin Conjugates", *Immunol. Rev.* 62:119-58 (1982).

Alternatively, an antibody can be conjugated to a second antibody to form an antibody
20 heteroconjugate as described by Segal in U.S. Patent No. 4,676,980, which is incorporated herein by reference in its entirety.

An antibody, with or without a therapeutic moiety conjugated to it, administered alone or in combination with cytotoxic factor(s) and/or cytokine(s) can be used as a therapeutic.

25 *Immunophenotyping*

The antibodies of the invention may be utilized for immunophenotyping of cell lines and biological samples. Translation products of the gene of the present invention may be useful as cell-specific markers, or more specifically as cellular markers that are differentially expressed at various stages of differentiation and/or maturation of particular cell types. Monoclonal antibodies
30 directed against a specific epitope, or combination of epitopes, will allow for the screening of cellular populations expressing the marker. Various techniques can be utilized using monoclonal antibodies to screen for cellular populations expressing the marker(s), and include magnetic separation using antibody-coated magnetic beads, "panning" with antibody attached to a solid matrix (i.e., plate), and flow cytometry (See, e.g., U.S. Patent 5,985,660; and Morrison *et al.*, *Cell*,
35 96:737-49 (1999)).

These techniques allow for the screening of particular populations of cells, such as might be found with hematological malignancies (i.e. minimal residual disease (MRD) in acute leukemic

patients) and "non-self" cells in transplantations to prevent Graft-versus-Host Disease (GVHD). Alternatively, these techniques allow for the screening of hematopoietic stem and progenitor cells capable of undergoing proliferation and/or differentiation, as might be found in human umbilical cord blood.

5

Assays For Antibody Binding

The antibodies of the invention may be assayed for immunospecific binding by any method known in the art. The immunoassays which can be used include but are not limited to competitive and non-competitive assay systems using techniques such as western blots, radioimmunoassays, ELISA (enzyme linked immunosorbent assay), "sandwich" immunoassays, immunoprecipitation assays, precipitin reactions, gel diffusion precipitin reactions, immunodiffusion assays, agglutination assays, complement-fixation assays, immunoradiometric assays, fluorescent immunoassays, and protein A immunoassays, to name but a few. Such assays are routine and well known in the art (see, e.g., Ausubel et al, eds, 1994, Current Protocols in Molecular Biology, Vol. 1, John Wiley & Sons, Inc., New York, which is incorporated by reference herein in its entirety). Exemplary immunoassays are described briefly below (but are not intended by way of limitation).

Immunoprecipitation protocols generally comprise lysing a population of cells in a lysis buffer such as RIPA buffer (1% NP-40 or Triton X- 100, 1% sodium deoxycholate, 0.1% SDS, 0.15 M NaCl, 0.01 M sodium phosphate at pH 7.2, 1% Trasylol) supplemented with protein phosphatase and/or protease inhibitors (e.g., EDTA, PMSF, aprotinin, sodium vanadate), adding the antibody of interest to the cell lysate, incubating for a period of time (e.g., 1-4 hours) at 4° C, adding protein A and/or protein G sepharose beads to the cell lysate, incubating for about an hour or more at 4° C, washing the beads in lysis buffer and resuspending the beads in SDS/sample buffer. The ability of the antibody of interest to immunoprecipitate a particular antigen can be assessed by, e.g., western blot analysis. One of skill in the art would be knowledgeable as to the parameters that can be modified to increase the binding of the antibody to an antigen and decrease the background (e.g., pre-clearing the cell lysate with sepharose beads). For further discussion regarding immunoprecipitation protocols see, e.g., Ausubel et al., eds., (1994), Current Protocols in Molecular Biology, Vol. 1, John Wiley & Sons, Inc., New York, section 10.16.1.

Western blot analysis generally comprises preparing protein samples, electrophoresis of the protein samples in a polyacrylamide gel (e.g., 8%- 20% SDS-PAGE depending on the molecular weight of the antigen), transferring the protein sample from the polyacrylamide gel to a membrane such as nitrocellulose, PVDF or nylon, blocking the membrane in blocking solution (e.g., PBS with 3% BSA or non-fat milk), washing the membrane in washing buffer (e.g., PBS-Tween 20), blocking the membrane with primary antibody (the antibody of interest) diluted in blocking buffer, washing the membrane in washing buffer, blocking the membrane with a

secondary antibody (which recognizes the primary antibody, e.g., an anti-human antibody) conjugated to an enzymatic substrate (e.g., horseradish peroxidase or alkaline phosphatase) or radioactive molecule (e.g., ^{32}P or ^{125}I) diluted in blocking buffer, washing the membrane in wash buffer, and detecting the presence of the antigen. One of skill in the art would be
5 knowledgeable as to the parameters that can be modified to increase the signal detected and to reduce the background noise. For further discussion regarding western blot protocols see, e.g., Ausubel et al, eds, (1994), Current Protocols in Molecular Biology, Vol. 1, John Wiley & Sons, Inc., New York, section 10.8.1.

ELISAs comprise preparing antigen, coating the well of a 96 well microtiter plate with the
10 antigen, adding the antibody of interest conjugated to a detectable compound such as an enzymatic substrate (e.g., horseradish peroxidase or alkaline phosphatase) to the well and incubating for a period of time, and detecting the presence of the antigen. In ELISAs the antibody of interest does not have to be conjugated to a detectable compound; instead, a second antibody (which recognizes the antibody of interest) conjugated to a detectable compound may be added to
15 the well. Further, instead of coating the well with the antigen, the antibody may be coated to the well. In this case, a second antibody conjugated to a detectable compound may be added following the addition of the antigen of interest to the coated well. One of skill in the art would be knowledgeable as to the parameters that can be modified to increase the signal detected as well as other variations of ELISAs known in the art. For further discussion regarding ELISAs see, e.g.,
20 Ausubel et al, eds, (1994), Current Protocols in Molecular Biology, Vol. 1, John Wiley & Sons, Inc., New York, section 11.2.1.

The binding affinity of an antibody to an antigen and the off-rate of an antibody-antigen interaction can be determined by competitive binding assays. One example of a competitive binding assay is a radioimmunoassay comprising the incubation of labeled antigen (e.g., ^3H or
25 ^{125}I) with the antibody of interest in the presence of increasing amounts of unlabeled antigen, and the detection of the antibody bound to the labeled antigen. The affinity of the antibody of interest for a particular antigen and the binding off-rates can be determined from the data by scatchard plot analysis. Competition with a second antibody can also be determined using radioimmunoassays. In this case, the antigen is incubated with antibody of interest conjugated to a labeled compound
30 (e.g., ^3H or ^{125}I) in the presence of increasing amounts of an unlabeled second antibody.

Antibodies of the invention may be characterized using immunocytochemistry methods on cells (e.g., mammalian cells, such as CHO cells) transfected with a vector enabling the expression of an antigen or with vector alone using techniques commonly known in the art. Antibodies that bind antigen transfected cells, but not vector-only transfected cells, are antigen specific.

35

Therapeutic Uses

Table 1D also provides information regarding biological activities and preferred therapeutic uses (i.e. see, "Preferred Indications" column) for polynucleotides and polypeptides of the invention (including antibodies, agonists, and/or antagonists thereof). Table 1D also provides information regarding assays which may be used to test polynucleotides and polypeptides of the invention (including antibodies, agonists, and/or antagonists thereof) for the corresponding biological activities. The first column ("Gene No.") provides the gene number in the application for each clone identifier. The second column ("cDNA ATCC Deposit No:Z") provides the unique clone identifier for each clone as previously described and indicated in Table 1A, Table 1B, and Table 1C. The third column ("AA SEQ ID NO:Y") indicates the Sequence Listing SEQ ID Number for polypeptide sequences encoded by the corresponding cDNA clones (also as indicated in Table 1A, Table 1B, and Table 2). The fourth column ("Biological Activity") indicates a biological activity corresponding to the indicated polypeptides (or polynucleotides encoding said polypeptides). The fifth column ("Exemplary Activity Assay") further describes the corresponding biological activity and also provides information pertaining to the various types of assays which may be performed to test, demonstrate, or quantify the corresponding biological activity.

The present invention is further directed to antibody-based therapies which involve administering antibodies of the invention to an animal, preferably a mammal, and most preferably a human, patient for treating one or more of the disclosed diseases, disorders, or conditions. Therapeutic compounds of the invention include, but are not limited to, antibodies of the invention (including fragments, analogs and derivatives thereof as described herein) and nucleic acids encoding antibodies of the invention (including fragments, analogs and derivatives thereof and anti-idiotypic antibodies as described herein). The antibodies of the invention can be used to detect, prevent, diagnose, prognosticate, treat, and/or ameliorate diseases, disorders or conditions associated with aberrant expression and/or activity of a polypeptide of the invention, including, but not limited to, gastrointestinal diseases and disorders. The treatment and/or prevention of gastrointestinal diseases and disorders associated with aberrant expression and/or activity of a polypeptide of the invention includes, but is not limited to, alleviating symptoms associated with gastrointestinal diseases and disorders. Antibodies of the invention may be provided in pharmaceutically acceptable compositions as known in the art or as described herein.

In a specific and preferred embodiment, the present invention is directed to antibody-based therapies which involve administering antibodies of the invention to an animal, preferably a mammal, and most preferably a human, patient for treating gastrointestinal diseases and disorders. Therapeutic compounds of the invention include, but are not limited to, antibodies of the invention (e.g., antibodies directed to the full length protein expressed on the cell surface of a mammalian cell; antibodies directed to an epitope of a polypeptide of the invention (such as, for example, a predicted linear epitope shown in column 7 of Table 1B.1; or a conformational epitope,

including fragments, analogs and derivatives thereof as described herein) and nucleic acids encoding antibodies of the invention (including fragments, analogs and derivatives thereof and anti-idiotypic antibodies as described herein). The antibodies of the invention can be used to detect, diagnose, prevent, treat, prognosticate, and/or ameliorate gastrointestinal diseases, disorders or conditions associated with aberrant expression and/or activity of a polypeptide of the invention. The treatment and/or prevention of gastrointestinal diseases, disorders, or conditions associated with aberrant expression and/or activity of a polypeptide of the invention includes, but is not limited to, alleviating symptoms associated with those diseases, disorders or conditions. Antibodies of the invention may be provided in pharmaceutically acceptable compositions as known in the art or as described herein.

A summary of the ways in which the antibodies of the present invention may be used therapeutically includes binding polynucleotides or polypeptides of the present invention locally or systemically in the body or by direct cytotoxicity of the antibody, e.g. as mediated by complement (CDC) or by effector cells (ADCC). Some of these approaches are described in more detail below. Armed with the teachings provided herein, one of ordinary skill in the art will know how to use the antibodies of the present invention for diagnostic, monitoring or therapeutic purposes without undue experimentation.

The antibodies of this invention may be advantageously utilized in combination with other monoclonal or chimeric antibodies, or with lymphokines or hematopoietic growth factors (such as, e.g., IL-2, IL-3 and IL-7), for example, which serve to increase the number or activity of effector cells which interact with the antibodies.

The antibodies of the invention may be administered alone or in combination with other types of treatments (e.g., radiation therapy, chemotherapy, hormonal therapy, immunotherapy and anti-tumor agents). Generally, administration of products of a species origin or species reactivity (in the case of antibodies) that is the same species as that of the patient is preferred. Thus, in a preferred embodiment, human antibodies, fragments derivatives, analogs, or nucleic acids, are administered to a human patient for therapy or prophylaxis.

It is preferred to use high affinity and/or potent *in vivo* inhibiting and/or neutralizing antibodies against polypeptides or polynucleotides of the present invention, fragments or regions thereof, for both immunoassays directed to and therapy of gastrointestinal diseases and disorders related to polynucleotides or polypeptides, including fragments thereof, of the present invention. Such antibodies, fragments, or regions, will preferably have an affinity for polynucleotides or polypeptides of the invention, including fragments thereof. Preferred binding affinities include those with a dissociation constant or K_d less than 5×10^{-2} M, 10^{-2} M, 5×10^{-3} M, 10^{-3} M, 5×10^{-4} M, 10^{-4} M, 5×10^{-5} M, 10^{-5} M, 5×10^{-6} M, 10^{-6} M, 5×10^{-7} M, 10^{-7} M, 5×10^{-8} M, 10^{-8} M, 5×10^{-9} M, 10^{-9} M, 5×10^{-10} M, 10^{-10} M, 5×10^{-11} M, 10^{-11} M, 5×10^{-12} M, 10^{-12} M, 5×10^{-13} M, 10^{-13} M, 5×10^{-14} M, 10^{-14} M, 5×10^{-15} M, and 10^{-15} M.

Gene Therapy

In a specific embodiment, nucleic acids comprising sequences encoding antibodies or functional derivatives thereof, are administered to treat, inhibit or prevent a gastrointestinal
5 disease or disorder associated with aberrant expression and/or activity of a polypeptide of the invention, by way of gene therapy. Gene therapy refers to therapy performed by the administration to a subject of an expressed or expressible nucleic acid. In this embodiment of the invention, the nucleic acids produce their encoded protein that mediates a therapeutic effect.

10 Any of the methods for gene therapy available in the art can be used according to the present invention. Exemplary methods are described below.

For general reviews of the methods of gene therapy, see Goldspiel et al., Clinical
Pharmacy 12:488-505 (1993); Wu and Wu, Biotherapy 3:87-95 (1991); Tolstoshev, Ann. Rev.
Pharmacol. Toxicol. 32:573-596 (1993); Mulligan, Science 260:926-932 (1993); and Morgan and
Anderson, Ann. Rev. Biochem. 62:191-217 (1993); May, TIBTECH 11(5):155-215 (1993).
15 Methods commonly known in the art of recombinant DNA technology which can be used are
described in Ausubel et al. (eds.), Current Protocols in Molecular Biology, John Wiley & Sons,
NY (1993); and Kriegler, Gene Transfer and Expression, A Laboratory Manual, Stockton Press,
NY (1990).

In a preferred embodiment, the compound comprises nucleic acid sequences encoding an
20 antibody, said nucleic acid sequences being part of expression vectors that express the antibody or
fragments or chimeric proteins or heavy or light chains thereof in a suitable host. In particular,
such nucleic acid sequences have promoters operably linked to the antibody coding region, said
promoter being inducible or constitutive, and, optionally, tissue-specific. In another particular
embodiment, nucleic acid molecules are used in which the antibody coding sequences and any
25 other desired sequences are flanked by regions that promote homologous recombination at a
desired site in the genome, thus providing for intrachromosomal expression of the antibody
encoding nucleic acids (Koller and Smithies, Proc. Natl. Acad. Sci. USA 86:8932-8935 (1989);
Zijlstra et al., Nature 342:435-438 (1989). In specific embodiments, the expressed antibody
molecule is a single chain antibody; alternatively, the nucleic acid sequences include sequences
30 encoding both the heavy and light chains, or fragments thereof, of the antibody.

Delivery of the nucleic acids into a patient may be either direct, in which case the patient
is directly exposed to the nucleic acid or nucleic acid-carrying vectors, or indirect, in which case,
cells are first transformed with the nucleic acids in vitro, then transplanted into the patient. These
two approaches are known, respectively, as *in vivo* or *ex vivo* gene therapy.

35 In a specific embodiment, the nucleic acid sequences are directly administered *in vivo*,
where it is expressed to produce the encoded product. This can be accomplished by any of
numerous methods known in the art, e.g., by constructing them as part of an appropriate nucleic

acid expression vector and administering it so that they become intracellular, e.g., by infection using defective or attenuated retrovirals or other viral vectors (see U.S. Patent No. 4,980,286), or by direct injection of naked DNA, or by use of microparticle bombardment (e.g., a gene gun; Biolistic, Dupont), or coating with lipids or cell-surface receptors or transfecting agents, 5 encapsulation in liposomes, microparticles, or microcapsules, or by administering them in linkage to a peptide which is known to enter the nucleus, by administering it in linkage to a ligand subject to receptor-mediated endocytosis (see, e.g., Wu and Wu, J. Biol. Chem. 262:4429-4432 (1987)) (which can be used to target cell types specifically expressing the receptors), etc. In another embodiment, nucleic acid-ligand complexes can be formed in which the ligand comprises a 10 fusogenic viral peptide to disrupt endosomes, allowing the nucleic acid to avoid lysosomal degradation. In yet another embodiment, the nucleic acid can be targeted *in vivo* for cell specific uptake and expression, by targeting a specific receptor (see, e.g., PCT Publications WO 92/06180; WO 92/22635; WO92/20316; WO93/14188, WO 93/20221). Alternatively, the nucleic acid can be introduced intracellularly and incorporated within host cell DNA for expression, by 15 homologous recombination (Koller and Smithies, Proc. Natl. Acad. Sci. USA 86:8932-8935 (1989); Zijlstra et al., Nature 342:435-438 (1989)).

In a specific embodiment, viral vectors that contains nucleic acid sequences encoding an antibody of the invention are used. For example, a retroviral vector can be used (see Miller et al., Meth. Enzymol. 217:581-599 (1993)). These retroviral vectors contain the components necessary 20 for the correct packaging of the viral genome and integration into the host cell DNA. The nucleic acid sequences encoding the antibody to be used in gene therapy are cloned into one or more vectors, which facilitates delivery of the gene into a patient. More detail about retroviral vectors can be found in Boesen et al., Biotherapy 6:291-302 (1994), which describes the use of a retroviral vector to deliver the *mdr1* gene to hematopoietic stem cells in order to make the stem 25 cells more resistant to chemotherapy. Other references illustrating the use of retroviral vectors in gene therapy are: Clowes et al., J. Clin. Invest. 93:644-651 (1994); Kiem et al., Blood 83:1467-1473 (1994); Salmons and Gunzberg, Human Gene Therapy 4:129-141 (1993); and Grossman and Wilson, Curr. Opin. in Genetics and Devel. 3:110-114 (1993).

Adenoviruses are other viral vectors that can be used in gene therapy. Adenoviruses are 30 especially attractive vehicles for delivering genes to respiratory epithelia. Adenoviruses naturally infect respiratory epithelia where they cause a mild disease. Other targets for adenovirus-based delivery systems are liver, the central nervous system, endothelial cells, and muscle. Adenoviruses have the advantage of being capable of infecting non-dividing cells. Kozarsky and Wilson, Current Opinion in Genetics and Development 3:499-503 (1993) present a review of 35 adenovirus-based gene therapy. Bout et al., Human Gene Therapy 5:3-10 (1994) demonstrated the use of adenovirus vectors to transfer genes to the respiratory epithelia of rhesus monkeys. Other instances of the use of adenoviruses in gene therapy can be found in Rosenfeld et al.,

Science 252:431-434 (1991); Rosenfeld et al., Cell 68:143- 155 (1992); Mastrangeli et al., J. Clin. Invest. 91:225-234 (1993); PCT Publication WO94/12649; and Wang, et al., Gene Therapy 2:775-783 (1995). In a preferred embodiment, adenovirus vectors are used.

Adeno-associated virus (AAV) has also been proposed for use in gene therapy (Walsh et al., Proc. Soc. Exp. Biol. Med. 204:289-300 (1993); U.S. Patent No. 5,436,146).

Another approach to gene therapy involves transferring a gene to cells in tissue culture by such methods as electroporation, lipofection, calcium phosphate mediated transfection, or viral infection. Usually, the method of transfer includes the transfer of a selectable marker to the cells. The cells are then placed under selection to isolate those cells that have taken up and are expressing the transferred gene. Those cells are then delivered to a patient.

In this embodiment, the nucleic acid is introduced into a cell prior to administration *in vivo* of the resulting recombinant cell. Such introduction can be carried out by any method known in the art, including but not limited to transfection, electroporation, microinjection, infection with a viral or bacteriophage vector containing the nucleic acid sequences, cell fusion, chromosome-mediated gene transfer, microcell-mediated gene transfer, spheroplast fusion, etc. Numerous techniques are known in the art for the introduction of foreign genes into cells (see, e.g., Loeffler and Behr, Meth. Enzymol. 217:599-618 (1993); Cohen et al., Meth. Enzymol. 217:618-644 (1993); Cline, Pharmac. Ther. 29:69-92m (1985) and may be used in accordance with the present invention, provided that the necessary developmental and physiological functions of the recipient cells are not disrupted. The technique should provide for the stable transfer of the nucleic acid to the cell, so that the nucleic acid is expressible by the cell and preferably heritable and expressible by its cell progeny.

The resulting recombinant cells can be delivered to a patient by various methods known in the art. Recombinant blood cells (e.g., hematopoietic stem or progenitor cells) are preferably administered intravenously. The amount of cells envisioned for use depends on the desired effect, patient state, etc., and can be determined by one skilled in the art.

Cells into which a nucleic acid can be introduced for purposes of gene therapy encompass any desired, available cell type, and include but are not limited to epithelial cells, endothelial cells, keratinocytes, fibroblasts, muscle cells, hepatocytes; blood cells such as T lymphocytes, B lymphocytes, monocytes, macrophages, neutrophils, eosinophils, megakaryocytes, granulocytes; various stem or progenitor cells, in particular hematopoietic stem or progenitor cells, e.g., as obtained from bone marrow, umbilical cord blood, peripheral blood, fetal liver, etc.

In a preferred embodiment, the cell used for gene therapy is autologous to the patient.

In an embodiment in which recombinant cells are used in gene therapy, nucleic acid sequences encoding an antibody are introduced into the cells such that they are expressible by the cells or their progeny, and the recombinant cells are then administered *in vivo* for therapeutic effect. In a specific embodiment, stem or progenitor cells are used. Any stem and/or progenitor

cells which can be isolated and maintained in vitro can potentially be used in accordance with this embodiment of the present invention (see e.g. PCT Publication WO 94/08598; Stemple and Anderson, Cell 71:973-985 (1992); Rheinwald, Meth. Cell Bio. 21A:229 (1980); and Pittelkow and Scott, Mayo Clinic Proc. 61:771 (1986)).

- 5 In a specific embodiment, the nucleic acid to be introduced for purposes of gene therapy comprises an inducible promoter operably linked to the coding region, such that expression of the nucleic acid is controllable by the presence or absence of an appropriate inducer of transcription.

Demonstration of Therapeutic or Prophylactic Activity

- 10 The compounds or pharmaceutical compositions of the invention are preferably tested in vitro, and then *in vivo* for the desired therapeutic or prophylactic activity, prior to use in humans. For example, in vitro assays to demonstrate the therapeutic or prophylactic utility of a compound or pharmaceutical composition include, the effect of a compound on a cell line or a patient tissue sample. The effect of the compound or composition on the cell line and/or tissue sample can be
15 determined utilizing techniques known to those of skill in the art including, but not limited to, rosette formation assays and cell lysis assays. In accordance with the invention, in vitro assays which can be used to determine whether administration of a specific compound is indicated, include in vitro cell culture assays in which a patient tissue sample is grown in culture, and exposed to or otherwise administered a compound, and the effect of such compound upon the
20 tissue sample is observed.

Therapeutic/Prophylactic Administration and Composition

- The invention provides methods of treatment, inhibition and prophylaxis by administration to a subject of an effective amount of a compound or pharmaceutical composition of the invention,
25 preferably a polypeptide or antibody of the invention. In a preferred embodiment, the compound is substantially purified (e.g., substantially free from substances that limit its effect or produce undesired side-effects). The subject is preferably an animal, including but not limited to animals such as cows, pigs, horses, chickens, cats, dogs, etc., and is preferably a mammal, and most preferably human.

- 30 Formulations and methods of administration that can be employed when the compound comprises a nucleic acid or an immunoglobulin are described above; additional appropriate formulations and routes of administration can be selected from among those described herein below.

- Various delivery systems are known and can be used to administer a compound of the
35 invention, e.g., encapsulation in liposomes, microparticles, microcapsules, recombinant cells capable of expressing the compound, receptor-mediated endocytosis (see, e.g., Wu and Wu, J. Biol. Chem. 262:4429-4432 (1987)), construction of a nucleic acid as part of a retroviral or other

vector, etc. Methods of introduction include but are not limited to intradermal, intramuscular, intraperitoneal, intravenous, subcutaneous, intranasal, epidural, and oral routes. The compounds or compositions may be administered by any convenient route, for example by infusion or bolus injection, by absorption through epithelial or mucocutaneous linings (e.g., oral mucosa, rectal and
5 intestinal mucosa, etc.) and may be administered together with other biologically active agents. Administration can be systemic or local. In addition, it may be desirable to introduce the pharmaceutical compounds or compositions of the invention into the central nervous system by any suitable route, including intraventricular and intrathecal injection; intraventricular injection may be facilitated by an intraventricular catheter, for example, attached to a reservoir, such as an
10 Ommaya reservoir. Pulmonary administration can also be employed, e.g., by use of an inhaler or nebulizer, and formulation with an aerosolizing agent.

In a specific embodiment, it may be desirable to administer the pharmaceutical compounds or compositions of the invention locally to the area in need of treatment; this may be achieved by, for example, and not by way of limitation, local infusion during surgery, topical
15 application, e.g., in conjunction with a wound dressing after surgery, by injection, by means of a catheter, by means of a suppository, or by means of an implant, said implant being of a porous, non-porous, or gelatinous material, including membranes, such as sialastic membranes, or fibers. Preferably, when administering a protein, including an antibody, of the invention, care must be taken to use materials to which the protein does not absorb.

20 In another embodiment, the compound or composition can be delivered in a vesicle, in particular a liposome (see Langer, *Science* 249:1527-1533 (1990); Treat et al., in *Liposomes in the Therapy of Infectious Disease and Cancer*, Lopez-Berestein and Fidler (eds.), Liss, New York, pp. 353- 365 (1989); Lopez-Berestein, *ibid.*, pp. 317-327; see generally *ibid.*)

In yet another embodiment, the compound or composition can be delivered in a controlled
25 release system. In one embodiment, a pump may be used (see Langer, *supra*; Sefton, *CRC Crit. Ref. Biomed. Eng.* 14:201 (1987); Buchwald et al., *Surgery* 88:507 (1980); Saudek et al., *N. Engl. J. Med.* 321:574 (1989)). In another embodiment, polymeric materials can be used (see *Medical Applications of Controlled Release*, Langer and Wise (eds.), CRC Pres., Boca Raton, Florida (1974); *Controlled Drug Bioavailability, Drug Product Design and Performance*, Smolen and Ball
30 (eds.), Wiley, New York (1984); Ranger and Peppas, J., *Macromol. Sci. Rev. Macromol. Chem.* 23:61 (1983); see also Levy et al., *Science* 228:190 (1985); During et al., *Ann. Neurol.* 25:351 (1989); Howard et al., *J.Neurosurg.* 71:105 (1989)). In yet another embodiment, a controlled release system can be placed in proximity of the therapeutic target, e.g., the brain, thus requiring only a fraction of the systemic dose (see, e.g., Goodson, in *Medical Applications of Controlled*
35 *Release, supra*, vol. 2, pp. 115-138 (1984)).

Other controlled release systems are discussed in the review by Langer (*Science* 249:1527-1533 (1990)).

In a specific embodiment where the compound of the invention is a nucleic acid encoding a protein, the nucleic acid can be administered *in vivo* to promote expression of its encoded protein, by constructing it as part of an appropriate nucleic acid expression vector and administering it so that it becomes intracellular, e.g., by use of a retroviral vector (see U.S. Patent
5 No. 4,980,286), or by direct injection, or by use of microparticle bombardment (e.g., a gene gun; Biolistic, Dupont), or coating with lipids or cell-surface receptors or transfecting agents, or by administering it in linkage to a homeobox- like peptide which is known to enter the nucleus (see e.g., Joliot et al., Proc. Natl. Acad. Sci. USA 88:1864-1868 (1991)), etc. Alternatively, a nucleic acid can be introduced intracellularly and incorporated within host cell DNA for expression, by
10 homologous recombination.

The present invention also provides pharmaceutical compositions. Such compositions comprise a therapeutically effective amount of a compound, and a pharmaceutically acceptable carrier. In a specific embodiment, the term "pharmaceutically acceptable" means approved by a regulatory agency of the Federal or a state government or listed in the U.S. Pharmacopeia or other
15 generally recognized pharmacopeia for use in animals, and more particularly in humans. The term "carrier" refers to a diluent, adjuvant, excipient, or vehicle with which the therapeutic is administered. Such pharmaceutical carriers can be sterile liquids, such as water and oils, including those of petroleum, animal, vegetable or synthetic origin, such as peanut oil, soybean oil, mineral oil, sesame oil and the like. Water is a preferred carrier when the pharmaceutical
20 composition is administered intravenously. Saline solutions and aqueous dextrose and glycerol solutions can also be employed as liquid carriers, particularly for injectable solutions. Suitable pharmaceutical excipients include starch, glucose, lactose, sucrose, gelatin, malt, rice, flour, chalk, silica gel, sodium stearate, glycerol monostearate, talc, sodium chloride, dried skim milk, glycerol, propylene, glycol, water, ethanol and the like. The composition, if desired, can also
25 contain minor amounts of wetting or emulsifying agents, or pH buffering agents. These compositions can take the form of solutions, suspensions, emulsion, tablets, pills, capsules, powders, sustained-release formulations and the like. The composition can be formulated as a suppository, with traditional binders and carriers such as triglycerides. Oral formulation can include standard carriers such as pharmaceutical grades of mannitol, lactose, starch, magnesium
30 stearate, sodium saccharine, cellulose, magnesium carbonate, etc. Examples of suitable pharmaceutical carriers are described in "Remington's Pharmaceutical Sciences" by E.W. Martin. Such compositions will contain a therapeutically effective amount of the compound, preferably in purified form, together with a suitable amount of carrier so as to provide the form for proper administration to the patient. The formulation should suit the mode of administration.

35 In a preferred embodiment, the composition is formulated in accordance with routine procedures as a pharmaceutical composition adapted for intravenous administration to human beings. Typically, compositions for intravenous administration are solutions in sterile isotonic

aqueous buffer. Where necessary, the composition may also include a solubilizing agent and a local anesthetic such as lignocaine to ease pain at the site of the injection. Generally, the ingredients are supplied either separately or mixed together in unit dosage form, for example, as a dry lyophilized powder or water free concentrate in a hermetically sealed container such as an ampoule or sachette indicating the quantity of active agent. Where the composition is to be administered by infusion, it can be dispensed with an infusion bottle containing sterile pharmaceutical grade water or saline. Where the composition is administered by injection, an ampoule of sterile water for injection or saline can be provided so that the ingredients may be mixed prior to administration.

The compounds of the invention can be formulated as neutral or salt forms. Pharmaceutically acceptable salts include those formed with anions such as those derived from hydrochloric, phosphoric, acetic, oxalic, tartaric acids, etc., and those formed with cations such as those derived from sodium, potassium, ammonium, calcium, ferric hydroxides, isopropylamine, triethylamine, 2-ethylamino ethanol, histidine, procaine, etc.

The amount of the compound of the invention which will be effective in the treatment, inhibition and prevention of a disease or disorder associated with aberrant expression and/or activity of a polypeptide of the invention can be determined by standard clinical techniques. In addition, *in vitro* assays may optionally be employed to help identify optimal dosage ranges. The precise dose to be employed in the formulation will also depend on the route of administration, and the seriousness of the disease or disorder, and should be decided according to the judgment of the practitioner and each patient's circumstances. Effective doses may be extrapolated from dose-response curves derived from *in vitro* or animal model test systems.

For antibodies, the dosage administered to a patient is typically 0.1 mg/kg to 100 mg/kg of the patient's body weight. Preferably, the dosage administered to a patient is between 0.1 mg/kg and 20 mg/kg of the patient's body weight, more preferably 1 mg/kg to 10 mg/kg of the patient's body weight. Generally, human antibodies have a longer half-life within the human body than antibodies from other species due to the immune response to the foreign polypeptides. Thus, lower dosages of human antibodies and less frequent administration is often possible. Further, the dosage and frequency of administration of antibodies of the invention may be reduced by enhancing uptake and tissue penetration (e.g., into the brain) of the antibodies by modifications such as, for example, lipidation.

The invention also provides a pharmaceutical pack or kit comprising one or more containers filled with one or more of the ingredients of the pharmaceutical compositions of the invention. Optionally associated with such container(s) can be a notice in the form prescribed by a governmental agency regulating the manufacture, use or sale of pharmaceuticals or biological products, which notice reflects approval by the agency of manufacture, use or sale for human administration.

Diagnosis and Imaging

Labeled antibodies, and derivatives and analogs thereof, which specifically bind to a polypeptide of interest can be used for diagnostic purposes to detect, diagnose, prognosticate, or
5 monitor gastrointestinal diseases, disorders, and/or conditions associated with the aberrant expression and/or activity of a polypeptide of the invention. The invention provides for the detection of aberrant expression of a polypeptide of interest, comprising (a) assaying the expression of the polypeptide of interest in cells or body fluid of an individual using one or more antibodies specific to the polypeptide interest and (b) comparing the level of gene expression with
10 a standard gene expression level, whereby an increase or decrease in the assayed polypeptide gene expression level compared to the standard expression level is indicative of aberrant expression.

The invention provides a diagnostic assay for diagnosing a gastrointestinal disease or disorder, comprising (a) assaying the expression of the polypeptide of interest in cells or body fluid of an individual using one or more antibodies specific to the polypeptide interest and (b)
15 comparing the level of gene expression with a standard gene expression level, whereby an increase or decrease in the assayed polypeptide gene expression level compared to the standard expression level is indicative of a particular gastrointestinal disease or disorder. With respect to gastrointestinal cancers, the presence of a relatively high amount of transcript in biopsied tissue from an individual may indicate a predisposition for the development of the disease, or may
20 provide a means for detecting the disease prior to the appearance of actual clinical symptoms. A more definitive diagnosis of this type may allow health professionals to employ preventative measures or aggressive treatment earlier thereby preventing the development or further progression of the gastrointestinal cancer.

Antibodies of the invention can be used to assay protein levels in a biological sample
25 using classical immunohistological methods known to those of skill in the art (e.g., see Jalkanen et al., J. Cell. Biol. 101:976-985 (1985); Jalkanen et al., J. Cell . Biol. 105:3087-3096 (1987)). Other antibody-based methods useful for detecting protein gene expression include immunoassays, such as the enzyme linked immunosorbent assay (ELISA) and the radioimmunoassay (RIA). Suitable antibody assay labels are known in the art and include enzyme labels, such as, glucose
30 oxidase; radioisotopes, such as iodine (125I, 121I), carbon (14C), sulfur (35S), tritium (3H), indium (112In), and technetium (99Tc); luminescent labels, such as luminol; and fluorescent labels, such as fluorescein and rhodamine, and biotin.

One facet of the invention is the detection and diagnosis of a disease or disorder associated with aberrant expression of a polypeptide of interest in an animal, preferably a mammal and most
35 preferably a human. In one embodiment, diagnosis comprises: a) administering (for example, parenterally, subcutaneously, or intraperitoneally) to a subject an effective amount of a labeled molecule which specifically binds to the polypeptide of interest; b) waiting for a time interval

following the administering for permitting the labeled molecule to preferentially concentrate at sites in the subject where the polypeptide is expressed (and for unbound labeled molecule to be cleared to background level); c) determining background level; and d) detecting the labeled molecule in the subject, such that detection of labeled molecule above the background level indicates that the subject has a particular disease or disorder associated with aberrant expression of the polypeptide of interest. Background level can be determined by various methods including, comparing the amount of labeled molecule detected to a standard value previously determined for a particular system.

It will be understood in the art that the size of the subject and the imaging system used will determine the quantity of imaging moiety needed to produce diagnostic images. In the case of a radioisotope moiety, for a human subject, the quantity of radioactivity injected will normally range from about 5 to 20 millicuries of ^{99m}Tc. The labeled antibody or antibody fragment will then preferentially accumulate at the location of cells which contain the specific protein. *In vivo* tumor imaging is described in S.W. Burchiel et al., "Immunopharmacokinetics of Radiolabeled Antibodies and Their Fragments." (Chapter 13 in *Tumor Imaging: The Radiochemical Detection of Cancer*, S.W. Burchiel and B. A. Rhodes, eds., Masson Publishing Inc. (1982)).

Depending on several variables, including the type of label used and the mode of administration, the time interval following the administration for permitting the labeled molecule to preferentially concentrate at sites in the subject and for unbound labeled molecule to be cleared to background level is 6 to 48 hours or 6 to 24 hours or 6 to 12 hours. In another embodiment the time interval following administration is 5 to 20 days or 5 to 10 days.

In an embodiment, monitoring of the disease or disorder is carried out by repeating the method for diagnosing the disease or disease, for example, one month after initial diagnosis, six months after initial diagnosis, one year after initial diagnosis, etc.

Presence of the labeled molecule can be detected in the patient using methods known in the art for *in vivo* scanning. These methods depend upon the type of label used. Skilled artisans will be able to determine the appropriate method for detecting a particular label. Methods and devices that may be used in the diagnostic methods of the invention include, but are not limited to, computed tomography (CT), whole body scan such as position emission tomography (PET), magnetic resonance imaging (MRI), and sonography.

In a specific embodiment, the molecule is labeled with a radioisotope and is detected in the patient using a radiation responsive surgical instrument (Thurston et al., U.S. Patent No. 5,441,050). In another embodiment, the molecule is labeled with a fluorescent compound and is detected in the patient using a fluorescence responsive scanning instrument. In another embodiment, the molecule is labeled with a positron emitting metal and is detected in the patient using positron emission-tomography. In yet another embodiment, the molecule is labeled with a paramagnetic label and is detected in a patient using magnetic resonance imaging (MRI).

Kits

The present invention provides kits that can be used in the above methods. In one embodiment, a kit comprises an antibody of the invention, preferably a purified antibody, in one or more containers. In a specific embodiment, the kits of the present invention contain a substantially isolated polypeptide comprising an epitope which is specifically immunoreactive with an antibody included in the kit. Preferably, the kits of the present invention further comprise a control antibody which does not react with the polypeptide of interest. In another specific embodiment, the kits of the present invention contain a means for detecting the binding of an antibody to a polypeptide of interest (e.g., the antibody may be conjugated to a detectable substrate such as a fluorescent compound, an enzymatic substrate, a radioactive compound or a luminescent compound, or a second antibody which recognizes the first antibody may be conjugated to a detectable substrate).

In another specific embodiment of the present invention, the kit is a diagnostic kit for use in screening serum containing antibodies specific against proliferative and/or cancerous polynucleotides and polypeptides. Such a kit may include a control antibody that does not react with the polypeptide of interest. Such a kit may include a substantially isolated polypeptide antigen comprising an epitope which is specifically immunoreactive with at least one anti-polypeptide antigen antibody. Further, such a kit includes means for detecting the binding of said antibody to the antigen (e.g., the antibody may be conjugated to a fluorescent compound such as fluorescein or rhodamine which can be detected by flow cytometry). In specific embodiments, the kit may include a recombinantly produced or chemically synthesized polypeptide antigen. The polypeptide antigen of the kit may also be attached to a solid support.

In a more specific embodiment the detecting means of the above-described kit includes a solid support to which said polypeptide antigen is attached. Such a kit may also include a non-attached reporter-labeled anti-human antibody. In this embodiment, binding of the antibody to the polypeptide antigen can be detected by binding of the said reporter-labeled antibody.

In an additional embodiment, the invention includes a diagnostic kit for use in screening serum containing antigens of the polypeptide of the invention. The diagnostic kit includes a substantially isolated antibody specifically immunoreactive with polypeptide or polynucleotide antigens, and means for detecting the binding of the polynucleotide or polypeptide antigen to the antibody. In one embodiment, the antibody is attached to a solid support. In a specific embodiment, the antibody may be a monoclonal antibody. The detecting means of the kit may include a second, labeled monoclonal antibody. Alternatively, or in addition, the detecting means may include a labeled, competing antigen.

In one diagnostic configuration, test serum is reacted with a solid phase reagent having a surface-bound antigen obtained by the methods of the present invention. After binding with

specific antigen antibody to the reagent and removing unbound serum components by washing, the reagent is reacted with reporter-labeled anti-human antibody to bind reporter to the reagent in proportion to the amount of bound anti-antigen antibody on the solid support. The reagent is again washed to remove unbound labeled antibody, and the amount of reporter associated with the reagent is determined. Typically, the reporter is an enzyme which is detected by incubating the solid phase in the presence of a suitable fluorometric, luminescent or colorimetric substrate (Sigma, St. Louis, MO).

The solid surface reagent in the above assay is prepared by known techniques for attaching protein material to solid support material, such as polymeric beads, dip sticks, 96-well plate or filter material. These attachment methods generally include non-specific adsorption of the protein to the support or covalent attachment of the protein, typically through a free amine group, to a chemically reactive group on the solid support, such as an activated carboxyl, hydroxyl, or aldehyde group. Alternatively, streptavidin coated plates can be used in conjunction with biotinylated antigen(s).

Thus, the invention provides an assay system or kit for carrying out this diagnostic method. The kit generally includes a support with surface-bound recombinant antigens, and a reporter-labeled anti-human antibody for detecting surface-bound anti-antigen antibody.

Uses of the Polynucleotides

Each of the polynucleotides identified herein can be used in numerous ways as reagents. The following description should be considered exemplary and utilizes known techniques.

The polynucleotides of the present invention are useful for chromosome identification. There exists an ongoing need to identify new chromosome markers, since few chromosome marking reagents, based on actual sequence data (repeat polymorphisms), are presently available. Each sequence is specifically targeted to and can hybridize with a particular location on an individual human chromosome, thus each polynucleotide of the present invention can routinely be used as a chromosome marker using techniques known in the art. Table 1B.1, column 8 provides the chromosome location of some of the polynucleotides of the invention.

Briefly, sequences can be mapped to chromosomes by preparing PCR primers (preferably at least 15 bp (e.g., 15-25 bp) from the sequences shown in SEQ ID NO:X. Primers can optionally be selected using computer analysis so that primers do not span more than one predicted exon in the genomic DNA. These primers are then used for PCR screening of somatic cell hybrids containing individual human chromosomes. Only those hybrids containing the human gene corresponding to SEQ ID NO:X will yield an amplified fragment.

Similarly, somatic hybrids provide a rapid method of PCR mapping the polynucleotides to particular chromosomes. Three or more clones can be assigned per day using a single thermal

cycler. Moreover, sublocalization of the polynucleotides can be achieved with panels of specific chromosome fragments. Other gene mapping strategies that can be used include in situ hybridization, prescreening with labeled flow-sorted chromosomes, preselection by hybridization to construct chromosome specific-cDNA libraries, and computer mapping techniques (See, e.g.,
5 Shuler, Trends Biotechnol 16:456-459 (1998) which is hereby incorporated by reference in its entirety).

Precise chromosomal location of the polynucleotides can also be achieved using fluorescence in situ hybridization (FISH) of a metaphase chromosomal spread. This technique uses polynucleotides as short as 500 or 600 bases; however, polynucleotides 2,000-4,000 bp are
10 preferred. For a review of this technique, see Verma et al., "Human Chromosomes: a Manual of Basic Techniques," Pergamon Press, New York (1988).

For chromosome mapping, the polynucleotides can be used individually (to mark a single chromosome or a single site on that chromosome) or in panels (for marking multiple sites and/or multiple chromosomes).

15 Thus, the present invention also provides a method for chromosomal localization which involves (a) preparing PCR primers from the polynucleotide sequences in Table 1B and/or Table 2 and SEQ ID NO:X and (b) screening somatic cell hybrids containing individual chromosomes.

The polynucleotides of the present invention would likewise be useful for radiation hybrid mapping, HAPPY mapping, and long range restriction mapping. For a review of these techniques and others known in the art, see, e.g. Dear, "Genome Mapping: A Practical Approach," IRL Press at Oxford University Press, London (1997); Aydin, J. Mol. Med. 77:691-694 (1999); Hacia et al.,
20 Mol. Psychiatry 3:483-492 (1998); Herrick et al., Chromosome Res. 7:409-423 (1999); Hamilton et al., Methods Cell Biol. 62:265-280 (2000); and/or Ott, J. Hered. 90:68-70 (1999) each of which is hereby incorporated by reference in its entirety.

25 Once a polynucleotide has been mapped to a precise chromosomal location, the physical position of the polynucleotide can be used in linkage analysis. Linkage analysis establishes coinheritance between a chromosomal location and presentation of a particular disease. (Disease mapping data are found, for example, in V. McKusick, Mendelian Inheritance in Man (available on line through Johns Hopkins University Welch Medical Library)). Column 9 of Table 1B.1
30 provides an OMIM reference identification number of diseases associated with the cytologic band disclosed in column 8 of Table 1B.1, as determined using techniques described herein and by reference to Table 5. Assuming 1 megabase mapping resolution and one gene per 20 kb, a cDNA precisely localized to a chromosomal region associated with the disease could be one of 50-500 potential causative genes.

35 Thus, once coinheritance is established, differences in a polynucleotide of the invention and the corresponding gene between affected and unaffected individuals can be examined. First, visible structural alterations in the chromosomes, such as deletions or translocations, are examined

in chromosome spreads or by PCR. If no structural alterations exist, the presence of point mutations are ascertained. Mutations observed in some or all affected individuals, but not in normal individuals, indicates that the mutation may cause the disease. However, complete sequencing of the polypeptide and the corresponding gene from several normal individuals is required to distinguish the mutation from a polymorphism. If a new polymorphism is identified, this polymorphic polypeptide can be used for further linkage analysis.

Furthermore, increased or decreased expression of the gene in affected individuals as compared to unaffected individuals can be assessed using the polynucleotides of the invention. Any of these alterations (altered expression, chromosomal rearrangement, or mutation) can be used as a diagnostic or prognostic marker. Diagnostic and prognostic methods, kits and reagents encompassed by the present invention are briefly described below and more thoroughly elsewhere herein (see e.g., the sections labeled "Antibodies", "Diagnostic Assays", and "Methods for Detecting Diseases").

Thus, the invention also provides a diagnostic method useful during diagnosis of a disorder, involving measuring the expression level of polynucleotides of the present invention in cells or body fluid from an individual and comparing the measured gene expression level with a standard level of polynucleotide expression level, whereby an increase or decrease in the gene expression level compared to the standard is indicative of a disorder. Additional non-limiting examples of diagnostic methods encompassed by the present invention are more thoroughly described elsewhere herein (see, e.g., Example 12).

In still another embodiment, the invention includes a kit for analyzing samples for the presence of proliferative and/or cancerous polynucleotides derived from a test subject. In a general embodiment, the kit includes at least one polynucleotide probe containing a nucleotide sequence that will specifically hybridize with a polynucleotide of the invention and a suitable container. In a specific embodiment, the kit includes two polynucleotide probes defining an internal region of the polynucleotide of the invention, where each probe has one strand containing a 31'-mer-end internal to the region. In a further embodiment, the probes may be useful as primers for polymerase chain reaction amplification.

Where a diagnosis of a related disorder, including, for example, diagnosis of a tumor, has already been made according to conventional methods, the present invention is useful as a prognostic indicator, whereby patients exhibiting enhanced or depressed polynucleotide of the invention expression will experience a worse clinical outcome relative to patients expressing the gene at a level nearer the standard level.

By "measuring the expression level of polynucleotides of the invention" is intended qualitatively or quantitatively measuring or estimating the level of the polypeptide of the invention or the level of the mRNA encoding the polypeptide of the invention in a first biological sample either directly (e.g., by determining or estimating absolute protein level or mRNA level) or

relatively (e.g., by comparing to the polypeptide level or mRNA level in a second biological sample). Preferably, the polypeptide level or mRNA level in the first biological sample is measured or estimated and compared to a standard polypeptide level or mRNA level, the standard being taken from a second biological sample obtained from an individual not having the related disorder or being determined by averaging levels from a population of individuals not having a related disorder. As will be appreciated in the art, once a standard polypeptide level or mRNA level is known, it can be used repeatedly as a standard for comparison.

By "biological sample" is intended any biological sample obtained from an individual, body fluid, cell line, tissue culture, or other source which contains polypeptide of the present invention or the corresponding mRNA. As indicated, biological samples include body fluids (such as semen, lymph, vaginal pool, sera, plasma, urine, synovial fluid and spinal fluid) which contain the polypeptide of the present invention, and tissue sources found to express the polypeptide of the present invention. Methods for obtaining tissue biopsies and body fluids from mammals are well known in the art. Where the biological sample is to include mRNA, a tissue biopsy is the preferred source.

The method(s) provided above may preferably be applied in a diagnostic method and/or kits in which polynucleotides and/or polypeptides of the invention are attached to a solid support. In one exemplary method, the support may be a "gene chip" or a "biological chip" as described in US Patents 5,837,832, 5,874,219, and 5,856,174. Further, such a gene chip with polynucleotides of the invention attached may be used to identify polymorphisms between the isolated polynucleotide sequences of the invention, with polynucleotides isolated from a test subject. The knowledge of such polymorphisms (i.e. their location, as well as, their existence) would be beneficial in identifying disease loci for many disorders, such as for example, in neural disorders, immune system disorders, muscular disorders, reproductive disorders, gastrointestinal disorders, pulmonary disorders, digestive disorders, metabolic disorders, cardiovascular disorders, renal disorders, proliferative disorders, and/or cancerous diseases and conditions. Such a method is described in US Patents 5,858,659 and 5,856,104. The US Patents referenced *supra* are hereby incorporated by reference in their entirety herein.

The present invention encompasses polynucleotides of the present invention that are chemically synthesized, or reproduced as peptide nucleic acids (PNA), or according to other methods known in the art. The use of PNAs would serve as the preferred form if the polynucleotides of the invention are incorporated onto a solid support, or gene chip. For the purposes of the present invention, a peptide nucleic acid (PNA) is a polyamide type of DNA analog and the monomeric units for adenine, guanine, thymine and cytosine are available commercially (Perceptive Biosystems). Certain components of DNA, such as phosphorus, phosphorus oxides, or deoxyribose derivatives, are not present in PNAs. As disclosed by Nielsen et al., Science 254, 1497 (1991); and Egholm et al., Nature 365, 666 (1993), PNAs bind

specifically and tightly to complementary DNA strands and are not degraded by nucleases. In fact, PNA binds more strongly to DNA than DNA itself does. This is probably because there is no electrostatic repulsion between the two strands, and also the polyamide backbone is more flexible. Because of this, PNA/DNA duplexes bind under a wider range of stringency conditions than
5 DNA/DNA duplexes, making it easier to perform multiplex hybridization. Smaller probes can be used than with DNA due to the strong binding. In addition, it is more likely that single base mismatches can be determined with PNA/DNA hybridization because a single mismatch in a PNA/DNA 15-mer lowers the melting point ($T_{sub.m}$) by 8°-20° C, vs. 4°-16° C for the DNA/DNA 15-mer duplex. Also, the absence of charge groups in PNA means that hybridization
10 can be done at low ionic strengths and reduce possible interference by salt during the analysis.

The compounds of the present invention have uses which include, but are not limited to, detecting cancer in mammals. In particular the invention is useful during diagnosis of pathological cell proliferative neoplasias which include, but are not limited to: acute myelogenous leukemias including acute monocytic leukemia, acute myeloblastic leukemia, acute promyelocytic leukemia,
15 acute myelomonocytic leukemia, acute erythroleukemia, acute megakaryocytic leukemia, and acute undifferentiated leukemia, etc.; and chronic myelogenous leukemias including chronic myelomonocytic leukemia, chronic granulocytic leukemia, etc. Preferred mammals include monkeys, apes, cats, dogs, cows, pigs, horses, rabbits and humans. Particularly preferred are humans.

20 Pathological cell proliferative disorders are often associated with inappropriate activation of proto-oncogenes. (Germann, E. P. et al., "The Etiology of Acute Leukemia: Molecular Genetics and Viral Oncology," in Neoplastic Diseases of the Blood, Vol 1., Wiernik, P. H. et al. eds., 161-182 (1985)). Neoplasias are now believed to result from the qualitative alteration of a normal cellular gene product, or from the quantitative modification of gene expression by insertion into
25 the chromosome of a viral sequence, by chromosomal translocation of a gene to a more actively transcribed region, or by some other mechanism. (Germann et al., *supra*) It is likely that mutated or altered expression of specific genes is involved in the pathogenesis of some leukemias, among other tissues and cell types. (Germann et al., *supra*) Indeed, the human counterparts of the oncogenes involved in some animal neoplasias have been amplified or translocated in some cases
30 of human leukemia and carcinoma. (Germann et al., *supra*)

For example, c-myc expression is highly amplified in the non-lymphocytic leukemia cell line HL-60. When HL-60 cells are chemically induced to stop proliferation, the level of c-myc is found to be downregulated. (International Publication Number WO 91/15580). However, it has been shown that exposure of HL-60 cells to a DNA construct that is complementary to the 5' end
35 of c-myc or c-myb blocks translation of the corresponding mRNAs which downregulates expression of the c-myc or c-myb proteins and causes arrest of cell proliferation and differentiation of the treated cells. (International Publication Number WO 91/15580; Wickstrom et al., Proc.

Natl. Acad. Sci. 85:1028 (1988); Anfossi et al., Proc. Natl. Acad. Sci. 86:3379 (1989)). However, the skilled artisan would appreciate the present invention's usefulness is not be limited to treatment, prevention, and/or prognosis of proliferative disorders of cells and tissues of hematopoietic origin, in light of the numerous cells and cell types of varying origins which are
5 known to exhibit proliferative phenotypes.

In addition to the foregoing, a polynucleotide of the present invention can be used to control gene expression through triple helix formation or through antisense DNA or RNA. Antisense techniques are discussed, for example, in Okano, J. Neurochem. 56: 560 (1991); "Oligodeoxynucleotides as Antisense Inhibitors of Gene Expression, CRC Press, Boca Raton, FL
10 (1988). Triple helix formation is discussed in, for instance Lee et al., Nucleic Acids Research 6: 3073 (1979); Cooney et al., Science 241: 456 (1988); and Dervan et al., Science 251: 1360 (1991). Both methods rely on binding of the polynucleotide to a complementary DNA or RNA. For these techniques, preferred polynucleotides are usually oligonucleotides 20 to 40 bases in length and complementary to either the region of the gene involved in transcription (triple helix - see Lee et
15 al., Nucl. Acids Res. 6:3073 (1979); Cooney et al., Science 241:456 (1988); and Dervan et al., Science 251:1360 (1991)) or to the mRNA itself (antisense - Okano, J. Neurochem. 56:560 (1991); Oligodeoxy-nucleotides as Antisense Inhibitors of Gene Expression, CRC Press, Boca Raton, FL (1988)). Triple helix formation optimally results in a shut-off of RNA transcription from DNA, while antisense RNA hybridization blocks translation of an mRNA molecule into polypeptide. The
20 oligonucleotide described above can also be delivered to cells such that the antisense RNA or DNA may be expressed *in vivo* to inhibit production of polypeptide of the present invention antigens. Both techniques are effective in model systems, and the information disclosed herein can be used to design antisense or triple helix polynucleotides in an effort to treat disease, and in particular, for the treatment of proliferative diseases and/or conditions. Non-limiting antisense and
25 triple helix methods encompassed by the present invention are more thoroughly described elsewhere herein (see, e.g., the section labeled "Antisense and Ribozyme (Antagonists)").

Polynucleotides of the present invention are also useful in gene therapy. One goal of gene therapy is to insert a normal gene into an organism having a defective gene, in an effort to correct the genetic defect. The polynucleotides disclosed in the present invention offer a means of
30 targeting such genetic defects in a highly accurate manner. Another goal is to insert a new gene that was not present in the host genome, thereby producing a new trait in the host cell. Additional non-limiting examples of gene therapy methods encompassed by the present invention are more thoroughly described elsewhere herein (see, e.g., the sections labeled "Gene Therapy Methods", and Examples 16, 17 and 18).

35 The polynucleotides are also useful for identifying individuals from minute biological samples. The United States military, for example, is considering the use of restriction fragment length polymorphism (RFLP) for identification of its personnel. In this technique, an individual's

genomic DNA is digested with one or more restriction enzymes, and probed on a Southern blot to yield unique bands for identifying personnel. This method does not suffer from the current limitations of "Dog Tags" which can be lost, switched, or stolen, making positive identification difficult. The polynucleotides of the present invention can be used as additional DNA markers for

5 RFLP.

The polynucleotides of the present invention can also be used as an alternative to RFLP, by determining the actual base-by-base DNA sequence of selected portions of an individual's genome. These sequences can be used to prepare PCR primers for amplifying and isolating such selected DNA, which can then be sequenced. Using this technique, individuals can be identified

10 because each individual will have a unique set of DNA sequences. Once an unique ID database is established for an individual, positive identification of that individual, living or dead, can be made from extremely small tissue samples.

Forensic biology also benefits from using DNA-based identification techniques as disclosed herein. DNA sequences taken from very small biological samples such as tissues, e.g.,

15 hair or skin, or body fluids, e.g., blood, saliva, semen, synovial fluid, amniotic fluid, breast milk, lymph; pulmonary sputum or surfactant, urine, fecal matter, etc., can be amplified using PCR. In one prior art technique, gene sequences amplified from polymorphic loci, such as DQa class II HLA gene, are used in forensic biology to identify individuals. (Erlich, H., PCR Technology, Freeman and Co. (1992)). Once these specific polymorphic loci are amplified, they are digested

20 with one or more restriction enzymes, yielding an identifying set of bands on a Southern blot probed with DNA corresponding to the DQa class II HLA gene. Similarly, polynucleotides of the present invention can be used as polymorphic markers for forensic purposes.

There is also a need for reagents capable of identifying the source of a particular tissue. Such need arises, for example, in forensics when presented with tissue of unknown origin.

25 Appropriate reagents can comprise, for example, DNA probes or primers prepared from the sequences of the present invention, specific to tissues, including but not limited to those shown in Table 1B. Panels of such reagents can identify tissue by species and/or by organ type. In a similar fashion, these reagents can be used to screen tissue cultures for contamination. Additional non-limiting examples of such uses are further described herein.

30 The polynucleotides of the present invention are also useful as hybridization probes for differential identification of the tissue(s) or cell type(s) present in a biological sample. Similarly, polypeptides and antibodies directed to polypeptides of the present invention are useful to provide immunological probes for differential identification of the tissue(s) (e.g., immunohistochemistry assays) or cell type(s) (e.g., immunocytochemistry assays). In addition, for a number of disorders

35 of the above tissues or cells, significantly higher or lower levels of gene expression of the polynucleotides/polypeptides of the present invention may be detected in certain tissues (e.g., tissues expressing polypeptides and/or polynucleotides of the present invention, for example, those

disclosed in Table 1B, and/or cancerous and/or wounded tissues) or bodily fluids (e.g., semen, lymph, vaginal pool, serum, plasma, urine, synovial fluid or spinal fluid) taken from an individual having such a disorder, relative to a "standard" gene expression level, i.e., the expression level in healthy tissue from an individual not having the disorder.

5 Thus, the invention provides a diagnostic method of a disorder, which involves: (a) assaying gene expression level in cells or body fluid of an individual; (b) comparing the gene expression level with a standard gene expression level, whereby an increase or decrease in the assayed gene expression level compared to the standard expression level is indicative of a disorder.

10 In the very least, the polynucleotides of the present invention can be used as molecular weight markers on Southern gels, as diagnostic probes for the presence of a specific mRNA in a particular cell type, as a probe to "subtract-out" known sequences in the process of discovering novel polynucleotides, for selecting and making oligomers for attachment to a "gene chip" or other support, to raise anti-DNA antibodies using DNA immunization techniques, and as an antigen to
15 elicit an immune response.

Uses of the Polypeptides

Each of the polypeptides identified herein can be used in numerous ways. The following description should be considered exemplary and utilizes known techniques.

20 Polypeptides and antibodies directed to polypeptides of the present invention are useful to provide immunological probes for differential identification of the tissue(s) (e.g., immunohistochemistry assays such as, for example, ABC immunoperoxidase (Hsu et al., J. Histochem. Cytochem. 29:577-580 (1981)) or cell type(s) (e.g., immunocytochemistry assays).

25 Antibodies can be used to assay levels of polypeptides encoded by polynucleotides of the invention in a biological sample using classical immunohistological methods known to those of skill in the art (e.g., see Jalkanen, et al., J. Cell. Biol. 101:976-985 (1985); Jalkanen, et al., J. Cell. Biol. 105:3087-3096 (1987)). Other antibody-based methods useful for detecting protein gene expression include immunoassays, such as the enzyme linked immunosorbent assay (ELISA) and the radioimmunoassay (RIA). Suitable antibody assay labels are known in the art and include
30 enzyme labels, such as, glucose oxidase; radioisotopes, such as iodine (^{131}I , ^{125}I , ^{123}I , ^{121}I), carbon (^{14}C), sulfur (^{35}S), tritium (^3H), indium ($^{115\text{m}}\text{In}$, $^{113\text{m}}\text{In}$, ^{112}In , ^{111}In), and technetium (^{99}Tc , $^{99\text{m}}\text{Tc}$), thallium (^{201}Tl), gallium (^{68}Ga , ^{67}Ga), palladium (^{103}Pd), molybdenum (^{99}Mo), xenon (^{133}Xe), fluorine (^{18}F), ^{153}Sm , ^{177}Lu , ^{159}Gd , ^{149}Pm , ^{140}La , ^{175}Yb , ^{166}Ho , ^{90}Y , ^{47}Sc , ^{186}Re , ^{188}Re , ^{142}Pr , ^{105}Rh , ^{97}Ru ; luminescent labels, such as luminol; and fluorescent labels, such as fluorescein and
35 rhodamine, and biotin.

In addition to assaying levels of polypeptide of the present invention in a biological sample, proteins can also be detected *in vivo* by imaging. Antibody labels or markers for *in vivo*

imaging of protein include those detectable by X-radiography, NMR or ESR. For X-radiography, suitable labels include radioisotopes such as barium or cesium, which emit detectable radiation but are not overtly harmful to the subject. Suitable markers for NMR and ESR include those with a detectable characteristic spin, such as deuterium, which may be incorporated into the antibody by labeling of nutrients for the relevant hybridoma.

A protein-specific antibody or antibody fragment which has been labeled with an appropriate detectable imaging moiety, such as a radioisotope (for example, ^{131}I , ^{112}In , $^{99\text{m}}\text{Tc}$, ^{131}I , ^{125}I , ^{123}I , ^{121}I), carbon (^{14}C), sulfur (^{35}S), tritium (^3H), indium ($^{115\text{m}}\text{In}$, $^{113\text{m}}\text{In}$, ^{112}In , ^{111}In), and technetium (^{99}Tc , $^{99\text{m}}\text{Tc}$), thallium (^{201}Tl), gallium (^{68}Ga , ^{67}Ga), palladium (^{103}Pd), molybdenum (^{99}Mo), xenon (^{133}Xe), fluorine (^{18}F , ^{153}Sm , ^{177}Lu , ^{159}Gd , ^{149}Pm , ^{140}La , ^{175}Yb , ^{166}Ho , ^{90}Y , ^{47}Sc , ^{186}Re , ^{188}Re , ^{142}Pr , ^{105}Rh , ^{97}Ru), a radio-opaque substance, or a material detectable by nuclear magnetic resonance, is introduced (for example, parenterally, subcutaneously or intraperitoneally) into the mammal to be examined for immune system disorder. It will be understood in the art that the size of the subject and the imaging system used will determine the quantity of imaging moiety needed to produce diagnostic images. In the case of a radioisotope moiety, for a human subject, the quantity of radioactivity injected will normally range from about 5 to 20 millicuries of $^{99\text{m}}\text{Tc}$. The labeled antibody or antibody fragment will then preferentially accumulate at the location of cells which express the polypeptide encoded by a polynucleotide of the invention. *In vivo* tumor imaging is described in S.W. Burchiel et al., "Immunopharmacokinetics of Radiolabeled Antibodies and Their Fragments" (Chapter 13 in *Tumor Imaging: The Radiochemical Detection of Cancer*, S.W. Burchiel and B. A. Rhodes, eds., Masson Publishing Inc. (1982)).

In one embodiment, the invention provides a method for the specific delivery of compositions of the invention to cells by administering polypeptides of the invention (e.g., polypeptides encoded by polynucleotides of the invention and/or antibodies) that are associated with heterologous polypeptides or nucleic acids. In one example, the invention provides a method for delivering a therapeutic protein into the targeted cell. In another example, the invention provides a method for delivering a single stranded nucleic acid (e.g., antisense or ribozymes) or double stranded nucleic acid (e.g., DNA that can integrate into the cell's genome or replicate episomally and that can be transcribed) into the targeted cell.

In another embodiment, the invention provides a method for the specific destruction of cells (e.g., the destruction of tumor cells) by administering polypeptides of the invention in association with toxins or cytotoxic prodrugs.

By "toxin" is meant one or more compounds that bind and activate endogenous cytotoxic effector systems, radioisotopes, holotoxins, modified toxins, catalytic subunits of toxins, or any molecules or enzymes not normally present in or on the surface of a cell that under defined conditions cause the cell's death. Toxins that may be used according to the methods of the invention include, but are not limited to, radioisotopes known in the art, compounds such as, for

example, antibodies (or complement fixing containing portions thereof) that bind an inherent or induced endogenous cytotoxic effector system, thymidine kinase, endonuclease, RNase, alpha toxin, ricin, abrin, *Pseudomonas* exotoxin A, diphtheria toxin, saporin, momordin, gelonin, pokeweed antiviral protein, alpha-sarcin and cholera toxin. "Toxin" also includes a cytostatic or
5 cytocidal agent, a therapeutic agent or a radioactive metal ion, e.g., alpha-emitters such as, for example, ²¹³Bi, or other radioisotopes such as, for example, ¹⁰³Pd, ¹³³Xe, ¹³¹I, ⁶⁸Ge, ⁵⁷Co, ⁶⁵Zn, ⁸⁵Sr, ³²P, ³⁵S, ⁹⁰Y, ¹⁵³Sm, ¹⁵³Gd, ¹⁶⁹Yb, ⁵¹Cr, ⁵⁴Mn, ⁷⁵Se, ¹¹³Sn, ⁹⁰Yttrium, ¹¹⁷Tin, ¹⁸⁶Rhenium, ¹⁶⁶Holmium, and ¹⁸⁸Rhenium; luminescent labels, such as luminol; and fluorescent labels, such as fluorescein and rhodamine, and biotin. In a specific embodiment, the invention provides a method
10 for the specific destruction of cells (e.g., the destruction of tumor cells) by administering polypeptides of the invention or antibodies of the invention in association with the radioisotope ⁹⁰Y. In another specific embodiment, the invention provides a method for the specific destruction of cells (e.g., the destruction of tumor cells) by administering polypeptides of the invention or antibodies of the invention in association with the radioisotope ¹¹¹In. In a further specific
15 embodiment, the invention provides a method for the specific destruction of cells (e.g., the destruction of tumor cells) by administering polypeptides of the invention or antibodies of the invention in association with the radioisotope ¹³¹I.

Techniques known in the art may be applied to label polypeptides of the invention (including antibodies). Such techniques include, but are not limited to, the use of bifunctional
20 conjugating agents (see e.g., U.S. Patent Nos. 5,756,065; 5,714,631; 5,696,239; 5,652,361; 5,505,931; 5,489,425; 5,435,990; 5,428,139; 5,342,604; 5,274,119; 4,994,560; and 5,808,003; the contents of each of which are hereby incorporated by reference in its entirety).

Thus, the invention provides a diagnostic method of a disorder, which involves (a) assaying the expression level of a polypeptide of the present invention in cells or body fluid of an
25 individual; and (b) comparing the assayed polypeptide expression level with a standard polypeptide expression level, whereby an increase or decrease in the assayed polypeptide expression level compared to the standard expression level is indicative of a disorder. With respect to cancer, the presence of a relatively high amount of transcript in biopsied tissue from an individual may indicate a predisposition for the development of the disease, or may provide a
30 means for detecting the disease prior to the appearance of actual clinical symptoms. A more definitive diagnosis of this type may allow health professionals to employ preventative measures or aggressive treatment earlier thereby preventing the development or further progression of the cancer.

Moreover, polypeptides of the present invention can be used to treat or prevent diseases or
35 conditions such as, for example, neural disorders, immune system disorders, muscular disorders, reproductive disorders, gastrointestinal disorders, pulmonary disorders, cardiovascular disorders, renal disorders, proliferative disorders, and/or cancerous diseases and conditions. For example,

patients can be administered a polypeptide of the present invention in an effort to replace absent or decreased levels of the polypeptide (e.g., insulin), to supplement absent or decreased levels of a different polypeptide (e.g., hemoglobin S for hemoglobin B, SOD, catalase, DNA repair proteins), to inhibit the activity of a polypeptide (e.g., an oncogene or tumor suppressor), to activate the activity of a polypeptide (e.g., by binding to a receptor), to reduce the activity of a membrane bound receptor by competing with it for free ligand (e.g., soluble TNF receptors used in reducing inflammation), or to bring about a desired response (e.g., blood vessel growth inhibition, enhancement of the immune response to proliferative cells or tissues).

Similarly, antibodies directed to a polypeptide of the present invention can also be used to treat disease (as described *supra*, and elsewhere herein). For example, administration of an antibody directed to a polypeptide of the present invention can bind, and/or neutralize the polypeptide, and/or reduce overproduction of the polypeptide. Similarly, administration of an antibody can activate the polypeptide, such as by binding to a polypeptide bound to a membrane (receptor).

At the very least, the polypeptides of the present invention can be used as molecular weight markers on SDS-PAGE gels or on molecular sieve gel filtration columns using methods well known to those of skill in the art. Polypeptides can also be used to raise antibodies, which in turn are used to measure protein expression from a recombinant cell, as a way of assessing transformation of the host cell. Moreover, the polypeptides of the present invention can be used to test the biological activities described herein.

Diagnostic Assays

The compounds of the present invention are useful for diagnosis, treatment, prevention and/or prognosis of various disorders in mammals, preferably humans. Such disorders include, but are not limited to, those related to biological activities described in Table 1D and, also as described herein under the section heading "Biological Activities".

For a number of disorders, substantially altered (increased or decreased) levels of gene expression can be detected in tissues, cells or bodily fluids (e.g., sera, plasma, urine, semen, synovial fluid or spinal fluid) taken from an individual having such a disorder, relative to a "standard" gene expression level, that is, the expression level in tissues or bodily fluids from an individual not having the disorder. Thus, the invention provides a diagnostic method useful during diagnosis of a disorder, which involves measuring the expression level of the gene encoding the polypeptide in tissues, cells or body fluid from an individual and comparing the measured gene expression level with a standard gene expression level, whereby an increase or decrease in the gene expression level(s) compared to the standard is indicative of a disorder. These diagnostic assays may be performed *in vivo* or *in vitro*, such as, for example, on blood samples, biopsy tissue or autopsy tissue.

The present invention is also useful as a prognostic indicator, whereby patients exhibiting enhanced or depressed gene expression will experience a worse clinical outcome relative to patients expressing the gene at a level nearer the standard level.

In certain embodiments, a polypeptide of the invention, or polynucleotides, antibodies, agonists, or antagonists corresponding to that polypeptide, may be used to diagnose and/or prognosticate diseases and/or disorders associated with the tissue(s) in which the polypeptide of the invention is expressed, including one, two, three, four, five, or more tissues disclosed in Table 1B.2, column 5 (Tissue Distribution Library Code).

By "assaying the expression level of the gene encoding the polypeptide" is intended qualitatively or quantitatively measuring or estimating the level of the polypeptide of the invention or the level of the mRNA encoding the polypeptide of the invention in a first biological sample either directly (e.g., by determining or estimating absolute protein level or mRNA level) or relatively (e.g., by comparing to the polypeptide level or mRNA level in a second biological sample). Preferably, the polypeptide expression level or mRNA level in the first biological sample is measured or estimated and compared to a standard polypeptide level or mRNA level, the standard being taken from a second biological sample obtained from an individual not having the disorder or being determined by averaging levels from a population of individuals not having the disorder. As will be appreciated in the art, once a standard polypeptide level or mRNA level is known, it can be used repeatedly as a standard for comparison.

By "biological sample" is intended any biological sample obtained from an individual, cell line, tissue culture, or other source containing polypeptides of the invention (including portions thereof) or mRNA. As indicated, biological samples include body fluids (such as sera, plasma, urine, synovial fluid and spinal fluid) and tissue sources found to express the full length or fragments thereof of a polypeptide or mRNA. Methods for obtaining tissue biopsies and body fluids from mammals are well known in the art. Where the biological sample is to include mRNA, a tissue biopsy is the preferred source.

Total cellular RNA can be isolated from a biological sample using any suitable technique such as the single-step guanidinium-thiocyanate-phenol-chloroform method described in Chomczynski and Sacchi, *Anal. Biochem.* 162:156-159 (1987). Levels of mRNA encoding the polypeptides of the invention are then assayed using any appropriate method. These include Northern blot analysis, S1 nuclease mapping, the polymerase chain reaction (PCR), reverse transcription in combination with the polymerase chain reaction (RT-PCR), and reverse transcription in combination with the ligase chain reaction (RT-LCR).

The present invention also relates to diagnostic assays such as quantitative and diagnostic assays for detecting levels of polypeptides of the invention, in a biological sample (e.g., cells and tissues), including determination of normal and abnormal levels of polypeptides. Thus, for instance, a diagnostic assay in accordance with the invention for detecting over-expression of

polypeptides of the invention compared to normal control tissue samples may be used to detect the presence of tumors. Assay techniques that can be used to determine levels of a polypeptide, such as a polypeptide of the present invention in a sample derived from a host are well-known to those of skill in the art. Such assay methods include radioimmunoassays, competitive-binding assays, 5 Western Blot analysis and ELISA assays. Assaying polypeptide levels in a biological sample can occur using any art-known method.

Assaying polypeptide levels in a biological sample can occur using antibody-based techniques. For example, polypeptide expression in tissues can be studied with classical immunohistological methods (Jalkanen et al., J. Cell. Biol. 101:976-985 (1985); Jalkanen, M., et 10 al., J. Cell. Biol. 105:3087-3096 (1987)). Other antibody-based methods useful for detecting polypeptide gene expression include immunoassays, such as the enzyme linked immunosorbent assay (ELISA) and the radioimmunoassay (RIA). Suitable antibody assay labels are known in the art and include enzyme labels, such as, glucose oxidase, and radioisotopes, such as iodine (^{125}I , ^{121}I), carbon (^{14}C), sulfur (^{35}S), tritium (^3H), indium (^{112}In), and technetium ($^{99\text{m}}\text{Tc}$), and fluorescent 15 labels, such as fluorescein and rhodamine, and biotin.

The tissue or cell type to be analyzed will generally include those which are known, or suspected, to express the gene of interest (such as, for example, cancer). The protein isolation methods employed herein may, for example, be such as those described in Harlow and Lane (Harlow, E. and Lane, D., 1988, "Antibodies: A Laboratory Manual", Cold Spring Harbor 20 Laboratory Press, Cold Spring Harbor, New York), which is incorporated herein by reference in its entirety. The isolated cells can be derived from cell culture or from a patient. The analysis of cells taken from culture may be a necessary step in the assessment of cells that could be used as part of a cell-based gene therapy technique or, alternatively, to test the effect of compounds on the expression of the gene.

For example, antibodies, or fragments of antibodies, such as those described herein, may be used to quantitatively or qualitatively detect the presence of gene products or conserved variants or peptide fragments thereof. This can be accomplished, for example, by immunofluorescence techniques employing a fluorescently labeled antibody coupled with light microscopic, flow cytometric, or fluorimetric detection. 25

In a preferred embodiment, antibodies, or fragments of antibodies directed to any one or all of the predicted epitope domains of the polypeptides of the invention (shown in column 7 of Table 1B.1) may be used to quantitatively or qualitatively detect the presence of gene products or conserved variants or peptide fragments thereof. This can be accomplished, for example, by immunofluorescence techniques employing a fluorescently labeled antibody coupled with light 35 microscopic, flow cytometric, or fluorimetric detection.

In an additional preferred embodiment, antibodies, or fragments of antibodies directed to a conformational epitope of a polypeptide of the invention may be used to quantitatively or

qualitatively detect the presence of gene products or conserved variants or peptide fragments thereof. This can be accomplished, for example, by immunofluorescence techniques employing a fluorescently labeled antibody coupled with light microscopic, flow cytometric, or fluorimetric detection.

5 The antibodies (or fragments thereof), and/or polypeptides of the present invention may, additionally, be employed histologically, as in immunofluorescence, immunoelectron microscopy or non-immunological assays, for in situ detection of gene products or conserved variants or peptide fragments thereof. In situ detection may be accomplished by removing a histological specimen from a patient, and applying thereto a labeled antibody or polypeptide of the present
10 invention. The antibody (or fragment thereof) or polypeptide is preferably applied by overlaying the labeled antibody (or fragment) onto a biological sample. Through the use of such a procedure, it is possible to determine not only the presence of the gene product, or conserved variants or peptide fragments, or polypeptide binding, but also its distribution in the examined tissue. Using the present invention, those of ordinary skill will readily perceive that any of a wide variety of
15 histological methods (such as staining procedures) can be modified in order to achieve such in situ detection.

Immunoassays and non-immunoassays for gene products or conserved variants or peptide fragments thereof will typically comprise incubating a sample, such as a biological fluid, a tissue extract, freshly harvested cells, or lysates of cells which have been incubated in cell culture, in the
20 presence of a detectably labeled antibody capable of binding gene products or conserved variants or peptide fragments thereof, and detecting the bound antibody by any of a number of techniques well-known in the art.

The biological sample may be brought in contact with and immobilized onto a solid phase support or carrier such as nitrocellulose, or other solid support which is capable of immobilizing
25 cells, cell particles or soluble proteins. The support may then be washed with suitable buffers followed by treatment with the detectably labeled antibody or detectable polypeptide of the invention. The solid phase support may then be washed with the buffer a second time to remove unbound antibody or polypeptide. Optionally the antibody is subsequently labeled. The amount of bound label on solid support may then be detected by conventional means.

30 By "solid phase support or carrier" is intended any support capable of binding an antigen or an antibody. Well-known supports or carriers include glass, polystyrene, polypropylene, polyethylene, dextran, nylon, amylases, natural and modified celluloses, polyacrylamides, gabbros, and magnetite. The nature of the carrier can be either soluble to some extent or insoluble for the purposes of the present invention. The support material may have virtually any possible structural
35 configuration so long as the coupled molecule is capable of binding to an antigen or antibody. Thus, the support configuration may be spherical, as in a bead, or cylindrical, as in the inside surface of a test tube, or the external surface of a rod. Alternatively, the surface may be flat such

as a sheet, test strip, etc. Preferred supports include polystyrene beads. Those skilled in the art will know many other suitable carriers for binding antibody or antigen, or will be able to ascertain the same by use of routine experimentation.

5 The binding activity of a given lot of antibody or antigen polypeptide may be determined according to well known methods. Those skilled in the art will be able to determine operative and optimal assay conditions for each determination by employing routine experimentation.

10 In addition to assaying polypeptide levels or polynucleotide levels in a biological sample obtained from an individual, polypeptide or polynucleotide can also be detected *in vivo* by imaging. For example, in one embodiment of the invention, polypeptides and/or antibodies of the invention are used to image diseased cells, such as neoplasms. In another embodiment, polynucleotides of the invention (e.g., polynucleotides complementary to all or a portion of an mRNA) and/or antibodies (e.g., antibodies directed to any one or a combination of the epitopes of a polypeptide of the invention, antibodies directed to a conformational epitope of a polypeptide of the invention, or antibodies directed to the full length polypeptide expressed on the cell surface of a mammalian cell) are used to image diseased or neoplastic cells.

15 Antibody labels or markers for *in vivo* imaging of polypeptides of the invention include those detectable by X-radiography, NMR, MRI, CAT-scans or ESR. For X-radiography, suitable labels include radioisotopes such as barium or cesium, which emit detectable radiation but are not overtly harmful to the subject. Suitable markers for NMR and ESR include those with a detectable characteristic spin, such as deuterium, which may be incorporated into the antibody by labeling of nutrients for the relevant hybridoma. Where *in vivo* imaging is used to detect enhanced levels of polypeptides for diagnosis in humans, it may be preferable to use human antibodies or "humanized" chimeric monoclonal antibodies. Such antibodies can be produced using techniques described herein or otherwise known in the art. For example methods for producing chimeric antibodies are known in the art. See, for review, Morrison, *Science* 229:1202 (1985); Oi et al., *BioTechniques* 4:214 (1986); Cabilly et al., U.S. Patent No. 4,816,567; Taniguchi et al., EP 171496; Morrison et al., EP 173494; Neuberger et al., WO 8601533; Robinson et al., WO 25 8702671; Boulianne et al., *Nature* 312:643 (1984); Neuberger et al., *Nature* 314:268 (1985).

30 Additionally, any polypeptides of the invention whose presence can be detected, can be administered. For example, polypeptides of the invention labeled with a radio-opaque or other appropriate compound can be administered and visualized *in vivo*, as discussed, above for labeled antibodies. Further, such polypeptides can be utilized for *in vitro* diagnostic procedures.

35 A polypeptide-specific antibody or antibody fragment which has been labeled with an appropriate detectable imaging moiety, such as a radioisotope (for example, ^{131}I , ^{112}In , $^{99\text{m}}\text{Tc}$), a radio-opaque substance, or a material detectable by nuclear magnetic resonance, is introduced (for example, parenterally, subcutaneously or intraperitoneally) into the mammal to be examined for a disorder. It will be understood in the art that the size of the subject and the imaging system used

will determine the quantity of imaging moiety needed to produce diagnostic images. In the case of a radioisotope moiety, for a human subject, the quantity of radioactivity injected will normally range from about 5 to 20 millicuries of ^{99m}Tc. The labeled antibody or antibody fragment will then preferentially accumulate at the location of cells which contain the antigenic protein. *In vivo* tumor imaging is described in S.W. Burchiel et al., "Immunopharmacokinetics of Radiolabeled Antibodies and Their Fragments" (Chapter 13 in *Tumor Imaging: The Radiochemical Detection of Cancer*, S.W. Burchiel and B. A. Rhodes, eds., Masson Publishing Inc. (1982)).

With respect to antibodies, one of the ways in which an antibody of the present invention can be detectably labeled is by linking the same to a reporter enzyme and using the linked product in an enzyme immunoassay (EIA) (Voller, A., "The Enzyme Linked Immunosorbent Assay (ELISA)", 1978, Diagnostic Horizons 2:1-7, Microbiological Associates Quarterly Publication, Walkersville, MD); Voller et al., *J. Clin. Pathol.* 31:507-520 (1978); Butler, J.E., *Meth. Enzymol.* 73:482-523 (1981); Maggio, E. (ed.), 1980, Enzyme Immunoassay, CRC Press, Boca Raton, FL.; Ishikawa, E. et al., (eds.), 1981, Enzyme Immunoassay, Kigaku Shoin, Tokyo). The reporter enzyme which is bound to the antibody will react with an appropriate substrate, preferably a chromogenic substrate, in such a manner as to produce a chemical moiety which can be detected, for example, by spectrophotometric, fluorimetric or by visual means. Reporter enzymes which can be used to detectably label the antibody include, but are not limited to, malate dehydrogenase, staphylococcal nuclease, delta-5-steroid isomerase, yeast alcohol dehydrogenase, alpha-glycerophosphate dehydrogenase, triose phosphate isomerase, horseradish peroxidase, alkaline phosphatase, asparaginase, glucose oxidase, beta-galactosidase, ribonuclease, urease, catalase, glucose-6-phosphate dehydrogenase, glucoamylase and acetylcholinesterase. Additionally, the detection can be accomplished by colorimetric methods which employ a chromogenic substrate for the reporter enzyme. Detection may also be accomplished by visual comparison of the extent of enzymatic reaction of a substrate in comparison with similarly prepared standards.

Detection may also be accomplished using any of a variety of other immunoassays. For example, by radioactively labeling the antibodies or antibody fragments, it is possible to detect polypeptides through the use of a radioimmunoassay (RIA) (see, for example, Weintraub, B., Principles of Radioimmunoassays, Seventh Training Course on Radioligand Assay Techniques, The Endocrine Society, March, 1986, which is incorporated by reference herein). The radioactive isotope can be detected by means including, but not limited to, a gamma counter, a scintillation counter, or autoradiography.

It is also possible to label the antibody with a fluorescent compound. When the fluorescently labeled antibody is exposed to light of the proper wave length, its presence can then be detected due to fluorescence. Among the most commonly used fluorescent labeling compounds are fluorescein isothiocyanate, rhodamine, phycoerythrin, phycocyanin, allophycocyanin, ophthaldehyde and fluorescamine.

The antibody can also be detectably labeled using fluorescence emitting metals such as ^{152}Eu , or others of the lanthanide series. These metals can be attached to the antibody using such metal chelating groups as diethylenetriaminepentacetic acid (DTPA) or ethylenediaminetetraacetic acid (EDTA).

5 The antibody also can be detectably labeled by coupling it to a chemiluminescent compound. The presence of the chemiluminescent-tagged antibody is then determined by detecting the presence of luminescence that arises during the course of a chemical reaction. Examples of particularly useful chemiluminescent labeling compounds are luminol, isoluminol, theromatic acridinium ester, imidazole, acridinium salt and oxalate ester.

10 Likewise, a bioluminescent compound may be used to label the antibody of the present invention. Bioluminescence is a type of chemiluminescence found in biological systems in, which a catalytic protein increases the efficiency of the chemiluminescent reaction. The presence of a bioluminescent protein is determined by detecting the presence of luminescence. Important bioluminescent compounds for purposes of labeling are luciferin, luciferase and aequorin.

15

Methods for Detecting Diseases

In general, a disease may be detected in a patient based on the presence of one or more proteins of the invention and/or polynucleotides encoding such proteins in a biological sample (for example, blood, sera, urine, and/or tumor biopsies) obtained from the patient. In other words, such
20 proteins may be used as markers to indicate the presence or absence of a disease or disorder, including cancer and/or as described elsewhere herein. In addition, such proteins may be useful for the detection of other diseases and cancers. The binding agents provided herein generally permit detection of the level of antigen that binds to the agent in the biological sample. Polynucleotide primers and probes may be used to detect the level of mRNA encoding polypeptides of the
25 invention, which is also indicative of the presence or absence of a disease or disorder, including cancer. In general, polypeptides of the invention should be present at a level that is at least three fold higher in diseased tissue than in normal tissue.

There are a variety of assay formats known to those of ordinary skill in the art for using a binding agent to detect polypeptide markers in a sample. See, e.g., Harlow and Lane, *supra*. In
30 general, the presence or absence of a disease in a patient may be determined by (a) contacting a biological sample obtained from a patient with a binding agent; (b) detecting in the sample a level of polypeptide that binds to the binding agent; and (c) comparing the level of polypeptide with a predetermined cut-off value.

In a preferred embodiment, the assay involves the use of a binding agent(s) immobilized
35 on a solid support to bind to and remove the polypeptide of the invention from the remainder of the sample. The bound polypeptide may then be detected using a detection reagent that contains a reporter group and specifically binds to the binding agent/polypeptide complex. Such detection

reagents may comprise, for example, a binding agent that specifically binds to the polypeptide or an antibody or other agent that specifically binds to the binding agent, such as an anti-immunoglobulin, protein G, protein A or a lectin. Alternatively, a competitive assay may be utilized, in which a polypeptide is labeled with a reporter group and allowed to bind to the
5 immobilized binding agent after incubation of the binding agent with the sample. The extent to which components of the sample inhibit the binding of the labeled polypeptide to the binding agent is indicative of the reactivity of the sample with the immobilized binding agent. Suitable polypeptides for use within such assays include polypeptides of the invention and portions thereof, or antibodies, to which the binding agent binds, as described above.

10 The solid support may be any material known to those of skill in the art to which polypeptides of the invention may be attached. For example, the solid support may be a test well in a microtiter plate or a nitrocellulose or other suitable membrane. Alternatively, the support may be a bead or disc, such as glass fiberglass, latex or a plastic material such as polystyrene or polyvinylchloride. The support may also be a magnetic particle or a fiber optic sensor, such as
15 those disclosed, for example, in U.S. Patent No. 5,359,681. The binding agent may be immobilized on the solid support using a variety of techniques known to those of skill in the art, which are amply described in the patent and scientific literature. In the context of the present invention, the term "immobilization" refers to both noncovalent association, such as adsorption, and covalent attachment (which may be a direct linkage between the agent and functional groups on the support
20 or may be a linkage by way of a cross-linking agent). Immobilization by adsorption to a well in a microtiter plate or to a membrane is preferred. In such cases, adsorption may be achieved by contacting the binding agent, in a suitable buffer, with the solid support for the suitable amount of time. The contact time varies with temperature, but is typically between about 1 hour and about 1 day. In general, contacting a well of plastic microtiter plate (such as polystyrene or
25 polyvinylchloride) with an amount of binding agent ranging from about 10 ng to about 10 ug, and preferably about 100 ng to about 1 ug, is sufficient to immobilize an adequate amount of binding agent.

Covalent attachment of binding agent to a solid support may generally be achieved by first reacting the support with a bifunctional reagent that will react with both the support and a
30 functional group, such as a hydroxyl or amino group, on the binding agent. For example, the binding agent may be covalently attached to supports having an appropriate polymer coating using benzoquinone or by condensation of an aldehyde group on the support with an amine and an active hydrogen on the binding partner (see, e.g., Pierce Immunotechnology Catalog and Handbook, 1991, at A12-A13).

35

Gene Therapy Methods

Also encompassed by the invention are gene therapy methods for treating or preventing disorders, diseases and conditions. The gene therapy methods relate to the introduction of nucleic acid (DNA, RNA and antisense DNA or RNA) sequences into an animal to achieve expression of the polypeptide of the present invention. This method requires a polynucleotide which codes for a polypeptide of the present invention operatively linked to a promoter and any other genetic elements necessary for the expression of the polypeptide by the target tissue. Such gene therapy and delivery techniques are known in the art, see, for example, WO90/11092, which is herein incorporated by reference.

Thus, for example, cells from a patient may be engineered with a polynucleotide (DNA or RNA) comprising a promoter operably linked to a polynucleotide of the present invention *ex vivo*, with the engineered cells then being provided to a patient to be treated with the polypeptide of the present invention. Such methods are well-known in the art. For example, see Beldegrun, A., et al., J. Natl. Cancer Inst. 85: 207-216 (1993); Ferrantini, M. et al., Cancer Research 53: 1107-1112 (1993); Ferrantini, M. et al., J. Immunology 153: 4604-4615 (1994); Kaido, T., et al., Int. J. Cancer 60: 221-229 (1995); Ogura, H., et al., Cancer Research 50: 5102-5106 (1990); Santodonato, L., et al., Human Gene Therapy 7:1-10 (1996); Santodonato, L., et al., Gene Therapy 4:1246-1255 (1997); and Zhang, J.-F. et al., Cancer Gene Therapy 3: 31-38 (1996)), which are herein incorporated by reference. In one embodiment, the cells which are engineered are arterial cells. The arterial cells may be reintroduced into the patient through direct injection to the artery, the tissues surrounding the artery, or through catheter injection.

As discussed in more detail below, the polynucleotide constructs can be delivered by any method that delivers injectable materials to the cells of an animal, such as, injection into the interstitial space of tissues (heart, muscle, skin, lung, liver, and the like). The polynucleotide constructs may be delivered in a pharmaceutically acceptable liquid or aqueous carrier.

In one embodiment, the polynucleotide of the present invention is delivered as a naked polynucleotide. The term "naked" polynucleotide, DNA or RNA refers to sequences that are free from any delivery vehicle that acts to assist, promote or facilitate entry into the cell, including viral sequences, viral particles, liposome formulations, lipofectin or precipitating agents and the like. However, the polynucleotide of the present invention can also be delivered in liposome formulations and lipofectin formulations and the like can be prepared by methods well known to those skilled in the art. Such methods are described, for example, in U.S. Patent Nos. 5,593,972, 5,589,466, and 5,580,859, which are herein incorporated by reference.

The polynucleotide vector constructs used in the gene therapy method are preferably constructs that will not integrate into the host genome nor will they contain sequences that allow for replication. Appropriate vectors include pWLNEO, pSV2CAT, pOG44, pXT1 and pSG available from Stratagene; pSVK3, pBPV, pMSG and pSVL available from Pharmacia; and

pEF1/V5, pcDNA3.1, and pRc/CMV2 available from Invitrogen. Other suitable vectors will be readily apparent to the skilled artisan.

Any strong promoter known to those skilled in the art can be used for driving the expression of the polynucleotide sequence. Suitable promoters include adenoviral promoters, such as the adenoviral major late promoter; or heterologous promoters, such as the cytomegalovirus (CMV) promoter; the respiratory syncytial virus (RSV) promoter; inducible promoters, such as the MMT promoter, the metallothionein promoter; heat shock promoters; the albumin promoter; the ApoAI promoter; human globin promoters; viral thymidine kinase promoters, such as the Herpes Simplex thymidine kinase promoter; retroviral LTRs; the b-actin promoter; and human growth hormone promoters. The promoter also may be the native promoter for the polynucleotide of the present invention.

Unlike other gene therapy techniques, one major advantage of introducing naked nucleic acid sequences into target cells is the transitory nature of the polynucleotide synthesis in the cells. Studies have shown that non-replicating DNA sequences can be introduced into cells to provide production of the desired polypeptide for periods of up to six months.

The polynucleotide construct can be delivered to the interstitial space of tissues within the an animal, including of muscle, skin, brain, lung, liver, spleen, bone marrow, thymus, heart, lymph, blood, bone, cartilage, pancreas, kidney, gall bladder, stomach, intestine, testis, ovary, uterus, rectum, nervous system, eye, gland, and connective tissue. Interstitial space of the tissues comprises the intercellular, fluid, mucopolysaccharide matrix among the reticular fibers of organ tissues, elastic fibers in the walls of vessels or chambers, collagen fibers of fibrous tissues, or that same matrix within connective tissue ensheathing muscle cells or in the lacunae of bone. It is similarly the space occupied by the plasma of the circulation and the lymph fluid of the lymphatic channels. Delivery to the interstitial space of muscle tissue is preferred for the reasons discussed below. They may be conveniently delivered by injection into the tissues comprising these cells. They are preferably delivered to and expressed in persistent, non-dividing cells which are differentiated, although delivery and expression may be achieved in non-differentiated or less completely differentiated cells, such as, for example, stem cells of blood or skin fibroblasts. *In vivo* muscle cells are particularly competent in their ability to take up and express polynucleotides.

For the naked nucleic acid sequence injection, an effective dosage amount of DNA or RNA will be in the range of from about 0.05 mg/kg body weight to about 50 mg/kg body weight. Preferably the dosage will be from about 0.005 mg/kg to about 20 mg/kg and more preferably from about 0.05 mg/kg to about 5 mg/kg. Of course, as the artisan of ordinary skill will appreciate, this dosage will vary according to the tissue site of injection. The appropriate and effective dosage of nucleic acid sequence can readily be determined by those of ordinary skill in the art and may depend on the condition being treated and the route of administration.

The preferred route of administration is by the parenteral route of injection into the interstitial space of tissues. However, other parenteral routes may also be used, such as, inhalation of an aerosol formulation particularly for delivery to lungs or bronchial tissues, throat or mucous membranes of the nose. In addition, naked DNA constructs can be delivered to arteries during angioplasty by the catheter used in the procedure.

The naked polynucleotides are delivered by any method known in the art, including, but not limited to, direct needle injection at the delivery site, intravenous injection, topical administration, catheter infusion, and so-called "gene guns". These delivery methods are known in the art.

The constructs may also be delivered with delivery vehicles such as viral sequences, viral particles, liposome formulations, lipofectin, precipitating agents, etc. Such methods of delivery are known in the art.

In certain embodiments, the polynucleotide constructs are complexed in a liposome preparation. Liposomal preparations for use in the instant invention include cationic (positively charged), anionic (negatively charged) and neutral preparations. However, cationic liposomes are particularly preferred because a tight charge complex can be formed between the cationic liposome and the polyanionic nucleic acid. Cationic liposomes have been shown to mediate intracellular delivery of plasmid DNA (Felgner et al., Proc. Natl. Acad. Sci. USA (1987) 84:7413-7416, which is herein incorporated by reference); mRNA (Malone et al., Proc. Natl. Acad. Sci. USA (1989) 86:6077-6081, which is herein incorporated by reference); and purified transcription factors (Debs et al., J. Biol. Chem. (1990) 265:10189-10192, which is herein incorporated by reference), in functional form.

Cationic liposomes are readily available. For example, N[1-2,3-dioleoyloxy)propyl]-N,N,N-triethylammonium (DOTMA) liposomes are particularly useful and are available under the trademark Lipofectin, from GIBCO BRL, Grand Island, N.Y. (See, also, Felgner et al., Proc. Natl. Acad. Sci. USA (1987) 84:7413-7416, which is herein incorporated by reference). Other commercially available liposomes include transfectace (DDAB/DOPE) and DOTAP/DOPE (Boehringer).

Other cationic liposomes can be prepared from readily available materials using techniques well known in the art. See, e.g. PCT Publication No. WO 90/11092 (which is herein incorporated by reference) for a description of the synthesis of DOTAP (1,2-bis(oleoyloxy)-3-(trimethylammonio)propane) liposomes. Preparation of DOTMA liposomes is explained in the literature, see, e.g., P. Felgner et al., Proc. Natl. Acad. Sci. USA 84:7413-7417, which is herein incorporated by reference. Similar methods can be used to prepare liposomes from other cationic lipid materials.

Similarly, anionic and neutral liposomes are readily available, such as from Avanti Polar Lipids (Birmingham, Ala.), or can be easily prepared using readily available materials. Such

materials include phosphatidyl, choline, cholesterol, phosphatidyl ethanolamine, dioleoylphosphatidyl choline (DOPC), dioleoylphosphatidyl glycerol (DOPG), dioleoylphosphatidyl ethanolamine (DOPE), among others. These materials can also be mixed with the DOTMA and DOTAP starting materials in appropriate ratios. Methods for making liposomes using these materials are well known in the art.

For example, commercially dioleoylphosphatidyl choline (DOPC), dioleoylphosphatidyl glycerol (DOPG), and dioleoylphosphatidyl ethanolamine (DOPE) can be used in various combinations to make conventional liposomes, with or without the addition of cholesterol. Thus, for example, DOPG/DOPC vesicles can be prepared by drying 50 mg each of DOPG and DOPC under a stream of nitrogen gas into a sonication vial. The sample is placed under a vacuum pump overnight and is hydrated the following day with deionized water. The sample is then sonicated for 2 hours in a capped vial, using a Heat Systems model 350 sonicator equipped with an inverted cup (bath type) probe at the maximum setting while the bath is circulated at 15EC. Alternatively, negatively charged vesicles can be prepared without sonication to produce multilamellar vesicles or by extrusion through nucleopore membranes to produce unilamellar vesicles of discrete size. Other methods are known and available to those of skill in the art.

The liposomes can comprise multilamellar vesicles (MLVs), small unilamellar vesicles (SUVs), or large unilamellar vesicles (LUVs), with SUVs being preferred. The various liposome-nucleic acid complexes are prepared using methods well known in the art. See, e.g., Straubinger et al., *Methods of Immunology* (1983), 101:512-527, which is herein incorporated by reference. For example, MLVs containing nucleic acid can be prepared by depositing a thin film of phospholipid on the walls of a glass tube and subsequently hydrating with a solution of the material to be encapsulated. SUVs are prepared by extended sonication of MLVs to produce a homogeneous population of unilamellar liposomes. The material to be entrapped is added to a suspension of preformed MLVs and then sonicated. When using liposomes containing cationic lipids, the dried lipid film is resuspended in an appropriate solution such as sterile water or an isotonic buffer solution such as 10 mM Tris/NaCl, sonicated, and then the preformed liposomes are mixed directly with the DNA. The liposome and DNA form a very stable complex due to binding of the positively charged liposomes to the cationic DNA. SUVs find use with small nucleic acid fragments. LUVs are prepared by a number of methods, well known in the art. Commonly used methods include Ca^{2+} -EDTA chelation (Papahadjopoulos et al., *Biochim. Biophys. Acta* (1975) 394:483; Wilson et al., *Cell* 17:77 (1979)); ether injection (Deamer, D. and Bangham, A., *Biochim. Biophys. Acta* 443:629 (1976); Ostro et al., *Biochem. Biophys. Res. Commun.* 76:836 (1977); Fraley et al., *Proc. Natl. Acad. Sci. USA* 76:3348 (1979)); detergent dialysis (Enoch, H. and Strittmatter, P., *Proc. Natl. Acad. Sci. USA* 76:145 (1979)); and reverse-phase evaporation (REV) (Fraley et al., *J. Biol. Chem.* 255:10431 (1980); Szoka, F. and

Papahadjopoulos, D., Proc. Natl. Acad. Sci. USA 75:145 (1978); Schaefer-Ridder et al., Science 215:166 (1982)), which are herein incorporated by reference.

Generally, the ratio of DNA to liposomes will be from about 10:1 to about 1:10. Preferably, the ration will be from about 5:1 to about 1:5. More preferably, the ration will be about 3:1 to about 1:3. Still more preferably, the ratio will be about 1:1.

U.S. Patent No. 5,676,954 (which is herein incorporated by reference) reports on the injection of genetic material, complexed with cationic liposomes carriers, into mice. U.S. Patent Nos. 4,897,355, 4,946,787, 5,049,386, 5,459,127, 5,589,466, 5,693,622, 5,580,859, 5,703,055, and international publication no. WO 94/9469 (which are herein incorporated by reference) provide cationic lipids for use in transfecting DNA into cells and mammals. U.S. Patent Nos. 5,589,466, 5,693,622, 5,580,859, 5,703,055, and international publication no. WO 94/9469 provide methods for delivering DNA-cationic lipid complexes to mammals.

In certain embodiments, cells are engineered, *ex vivo* or *in vivo*, using a retroviral particle containing RNA which comprises a sequence encoding a polypeptide of the present invention. Retroviruses from which the retroviral plasmid vectors may be derived include, but are not limited to, Moloney Murine Leukemia Virus, spleen necrosis virus, Rous sarcoma Virus, Harvey Sarcoma Virus, avian leukosis virus, gibbon ape leukemia virus, human immunodeficiency virus, Myeloproliferative Sarcoma Virus, and mammary tumor virus.

The retroviral plasmid vector is employed to transduce packaging cell lines to form producer cell lines. Examples of packaging cells which may be transfected include, but are not limited to, the PE501, PA317, R-2, R-AM, PA12, T19-14X, VT-19-17-H2, RCRE, RCRIP, GP+E-86, GP+envAm12, and DAN cell lines as described in Miller, Human Gene Therapy 1:5-14 (1990), which is incorporated herein by reference in its entirety. The vector may transduce the packaging cells through any means known in the art. Such means include, but are not limited to, electroporation, the use of liposomes, and CaPO₄ precipitation. In one alternative, the retroviral plasmid vector may be encapsulated into a liposome, or coupled to a lipid, and then administered to a host.

The producer cell line generates infectious retroviral vector particles which include polynucleotide encoding a polypeptide of the present invention. Such retroviral vector particles then may be employed, to transduce eukaryotic cells, either *in vitro* or *in vivo*. The transduced eukaryotic cells will express a polypeptide of the present invention.

In certain other embodiments, cells are engineered, *ex vivo* or *in vivo*, with polynucleotide contained in an adenovirus vector. Adenovirus can be manipulated such that it encodes and expresses a polypeptide of the present invention, and at the same time is inactivated in terms of its ability to replicate in a normal lytic viral life cycle. Adenovirus expression is achieved without integration of the viral DNA into the host cell chromosome, thereby alleviating concerns about insertional mutagenesis. Furthermore, adenoviruses have been used as live enteric vaccines for

many years with an excellent safety profile (Schwartz et al. Am. Rev. Respir. Dis.109:233-238 (1974)). Finally, adenovirus mediated gene transfer has been demonstrated in a number of instances including transfer of alpha-1-antitrypsin and CFTR to the lungs of cotton rats (Rosenfeld, M. A. et al. (1991) Science 252:431-434; Rosenfeld et al., (1992) Cell 68:143-155).

5 Furthermore, extensive studies to attempt to establish adenovirus as a causative agent in human cancer were uniformly negative (Green, M. et al. (1979) Proc. Natl. Acad. Sci. USA 76:6606).

Suitable adenoviral vectors useful in the present invention are described, for example, in Kozarsky and Wilson, Curr. Opin. Genet. Devel. 3:499-503 (1993); Rosenfeld et al., Cell 68:143-155 (1992); Engelhardt et al., Human Genet. Ther. 4:759-769 (1993); Yang et al., Nature Genet. 10 7:362-369 (1994); Wilson et al., Nature 365:691-692 (1993); and U.S. Patent No. 5,652,224, which are herein incorporated by reference. For example, the adenovirus vector Ad2 is useful and can be grown in human 293 cells. These cells contain the E1 region of adenovirus and constitutively express E1a and E1b, which complement the defective adenoviruses by providing the products of the genes deleted from the vector. In addition to Ad2, other varieties of adenovirus 15 (e.g., Ad3, Ad5, and Ad7) are also useful in the present invention.

Preferably, the adenoviruses used in the present invention are replication deficient. Replication deficient adenoviruses require the aid of a helper virus and/or packaging cell line to form infectious particles. The resulting virus is capable of infecting cells and can express a polynucleotide of interest which is operably linked to a promoter, but cannot replicate in most 20 cells. Replication deficient adenoviruses may be deleted in one or more of all or a portion of the following genes: E1a, E1b, E3, E4, E2a, or L1 through L5.

In certain other embodiments, the cells are engineered, *ex vivo* or *in vivo*, using an adeno-associated virus (AAV). AAVs are naturally occurring defective viruses that require helper viruses to produce infectious particles (Muzyczka, N., Curr. Topics in Microbiol. Immunol. 158:97 25 (1992)). It is also one of the few viruses that may integrate its DNA into non-dividing cells. Vectors containing as little as 300 base pairs of AAV can be packaged and can integrate, but space for exogenous DNA is limited to about 4.5 kb. Methods for producing and using such AAVs are known in the art. See, for example, U.S. Patent Nos. 5,139,941, 5,173,414, 5,354,678, 5,436,146, 5,474,935, 5,478,745, and 5,589,377.

30 For example, an appropriate AAV vector for use in the present invention will include all the sequences necessary for DNA replication, encapsidation, and host-cell integration. The polynucleotide construct is inserted into the AAV vector using standard cloning methods, such as those found in Sambrook et al., Molecular Cloning: A Laboratory Manual, Cold Spring Harbor Press (1989). The recombinant AAV vector is then transfected into packaging cells which are 35 infected with a helper virus, using any standard technique, including lipofection, electroporation, calcium phosphate precipitation, etc. Appropriate helper viruses include adenoviruses, cytomegaloviruses, vaccinia viruses, or herpes viruses. Once the packaging cells are transfected

and infected, they will produce infectious AAV viral particles which contain the polynucleotide construct. These viral particles are then used to transduce eukaryotic cells, either *ex vivo* or *in vivo*. The transduced cells will contain the polynucleotide construct integrated into its genome, and will express a polypeptide of the invention.

5 Another method of gene therapy involves operably associating heterologous control regions and endogenous polynucleotide sequences (e.g. encoding a polypeptide of the present invention) via homologous recombination (see, e.g., U.S. Patent No. 5,641,670, issued June 24, 1997; International Publication No. WO 96/29411, published September 26, 1996; International
10 Publication No. WO 94/12650, published August 4, 1994; Koller et al., Proc. Natl. Acad. Sci. USA 86:8932-8935 (1989); and Zijlstra et al., Nature 342:435-438 (1989), which are herein incorporated by reference. This method involves the activation of a gene which is present in the target cells, but which is not normally expressed in the cells, or is expressed at a lower level than desired.

Polynucleotide constructs are made, using standard techniques known in the art, which
15 contain the promoter with targeting sequences flanking the promoter. Suitable promoters are described herein. The targeting sequence is sufficiently complementary to an endogenous sequence to permit homologous recombination of the promoter-targeting sequence with the endogenous sequence. The targeting sequence will be sufficiently near the 5' end of the desired endogenous polynucleotide sequence so the promoter will be operably linked to the endogenous
20 sequence upon homologous recombination.

The promoter and the targeting sequences can be amplified using PCR. Preferably, the amplified promoter contains distinct restriction enzyme sites on the 5' and 3' ends. Preferably, the 3' end of the first targeting sequence contains the same restriction enzyme site as the 5' end of the amplified promoter and the 5' end of the second targeting sequence contains the same restriction
25 site as the 3' end of the amplified promoter. The amplified promoter and targeting sequences are digested and ligated together.

The promoter-targeting sequence construct is delivered to the cells, either as naked polynucleotide, or in conjunction with transfection-facilitating agents, such as liposomes, viral sequences, viral particles, whole viruses, lipofection, precipitating agents, etc., described in more
30 detail above. The P promoter-targeting sequence can be delivered by any method, included direct needle injection, intravenous injection, topical administration, catheter infusion, particle accelerators, etc. The methods are described in more detail below.

The promoter-targeting sequence construct is taken up by cells. Homologous recombination between the construct and the endogenous sequence takes place, such that an
35 endogenous sequence is placed under the control of the promoter. The promoter then drives the expression of the endogenous sequence.

The polynucleotide encoding a polypeptide of the present invention may contain a secretory signal sequence that facilitates secretion of the protein. Typically, the signal sequence is positioned in the coding region of the polynucleotide to be expressed towards or at the 5' end of the coding region. The signal sequence may be homologous or heterologous to the polynucleotide of interest and may be homologous or heterologous to the cells to be transfected. Additionally, the signal sequence may be chemically synthesized using methods known in the art.

Any mode of administration of any of the above-described polynucleotides constructs can be used so long as the mode results in the expression of one or more molecules in an amount sufficient to provide a therapeutic effect. This includes direct needle injection, systemic injection, catheter infusion, biolistic injectors, particle accelerators (i.e., "gene guns"), gelfoam sponge depots, other commercially available depot materials, osmotic pumps (e.g., Alza minipumps), oral or suppository solid (tablet or pill) pharmaceutical formulations, and decanting or topical applications during surgery. For example, direct injection of naked calcium phosphate-precipitated plasmid into rat liver and rat spleen or a protein-coated plasmid into the portal vein has resulted in gene expression of the foreign gene in the rat livers (Kaneda et al., Science 243:375 (1989)).

A preferred method of local administration is by direct injection. Preferably, a recombinant molecule of the present invention complexed with a delivery vehicle is administered by direct injection into or locally within the area of arteries. Administration of a composition locally within the area of arteries refers to injecting the composition centimeters and preferably, millimeters within arteries.

Another method of local administration is to contact a polynucleotide construct of the present invention in or around a surgical wound. For example, a patient can undergo surgery and the polynucleotide construct can be coated on the surface of tissue inside the wound or the construct can be injected into areas of tissue inside the wound.

Therapeutic compositions useful in systemic administration, include recombinant molecules of the present invention complexed to a targeted delivery vehicle of the present invention. Suitable delivery vehicles for use with systemic administration comprise liposomes comprising ligands for targeting the vehicle to a particular site. In specific embodiments, suitable delivery vehicles for use with systemic administration comprise liposomes comprising polypeptides of the invention for targeting the vehicle to a particular site.

Preferred methods of systemic administration, include intravenous injection, aerosol, oral and percutaneous (topical) delivery. Intravenous injections can be performed using methods standard in the art. Aerosol delivery can also be performed using methods standard in the art (see, for example, Stribling et al., Proc. Natl. Acad. Sci. USA 189:11277-11281, 1992, which is incorporated herein by reference). Oral delivery can be performed by complexing a polynucleotide construct of the present invention to a carrier capable of withstanding degradation by digestive

enzymes in the gut of an animal. Examples of such carriers, include plastic capsules or tablets, such as those known in the art. Topical delivery can be performed by mixing a polynucleotide construct of the present invention with a lipophilic reagent (e.g., DMSO) that is capable of passing into the skin.

5 Determining an effective amount of substance to be delivered can depend upon a number of factors including, for example, the chemical structure and biological activity of the substance, the age and weight of the animal, the precise condition requiring treatment and its severity, and the route of administration. The frequency of treatments depends upon a number of factors, such as the amount of polynucleotide constructs administered per dose, as well as the health and history of
10 the subject. The precise amount, number of doses, and timing of doses will be determined by the attending physician or veterinarian.

Therapeutic compositions of the present invention can be administered to any animal, preferably to mammals and birds. Preferred mammals include humans, dogs, cats, mice, rats, rabbits sheep, cattle, horses and pigs, with humans being particularly preferred.

15

Biological Activities

Polynucleotides or polypeptides, or agonists or antagonists of the present invention, can be used in assays to test for one or more biological activities. If these polynucleotides or polypeptides, or agonists or antagonists of the present invention, do exhibit activity in a particular
20 assay, it is likely that these molecules may be involved in the diseases associated with the biological activity. Thus, the polynucleotides and polypeptides, and agonists or antagonists could be used to treat the associated disease.

Members of the secreted family of proteins are believed to be involved in biological activities associated with, for example, cellular signaling. Accordingly, compositions of the
25 invention (including polynucleotides, polypeptides and antibodies of the invention, and fragments and variants thereof) may be used in diagnosis, prognosis, prevention and/or treatment of diseases and/or disorders associated with aberrant activity of secreted polypeptides.

In preferred embodiments, compositions of the invention (including polynucleotides, polypeptides and antibodies of the invention, and fragments and variants thereof) may be used in
30 the diagnosis, prognosis, prevention, treatment, and/or amelioration of diseases and/or disorders relating to the gastrointestinal system (e.g., Crohn's disease, pancreatitis, gallstones, antibiotic-associated colitis, duodenitis, gastrointestinal neoplasms, and as described in the "Gastrointestinal Disorders" section below). In certain embodiments, a polypeptide of the invention, or polynucleotides, antibodies, agonists, or antagonists corresponding to that polypeptide, may be
35 used to diagnose and/or prognosticate diseases and/or disorders associated with the tissue(s) in which the polypeptide of the invention is expressed including one, two, three, four, five, or more tissues disclosed in Table 1B.2, column 5 (Tissue Distribution Library Code).

Thus, polynucleotides, translation products and antibodies of the invention are useful in the diagnosis, detection, prevention, prognostication, and/or treatment of diseases and/or disorders associated with activities that include, but are not limited to, prohormone activation, neurotransmitter activity, cellular signaling, cellular proliferation, cellular differentiation, and cell migration.

More generally, polynucleotides, translation products and antibodies corresponding to this gene may be useful for the diagnosis, prognosis, prevention, treatment and/or amelioration of diseases and/or disorders associated with the following system or systems.

Immune Activity

Polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention may be useful in preventing, diagnosing, prognosticating, treating, and/or ameliorating diseases, disorders, and/or conditions of the immune system, by, for example, activating or inhibiting the proliferation, differentiation, or mobilization (chemotaxis) of immune cells. Immune cells develop through a process called hematopoiesis, producing myeloid (platelets, red blood cells, neutrophils, and macrophages) and lymphoid (B and T lymphocytes) cells from pluripotent stem cells. The etiology of these immune diseases, disorders, and/or conditions may be genetic, somatic, such as cancer and some autoimmune diseases, acquired (e.g., by chemotherapy or toxins), or infectious. Moreover, polynucleotides, polypeptides, antibodies, and/or agonists or antagonists of the present invention can be used as a marker or detector of a particular immune system disease or disorder.

Wound Healing and Epithelial Cell Proliferation

In accordance with yet a further aspect of the present invention, there is provided a process for utilizing polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, for therapeutic purposes, for example, to stimulate epithelial cell proliferation and basal keratinocytes for the purpose of wound healing, and to stimulate hair follicle production and healing of dermal wounds. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, may be clinically useful in stimulating wound healing including surgical wounds, excisional wounds, deep wounds involving damage of the dermis and epidermis, eye tissue wounds, dental tissue wounds, oral cavity wounds, diabetic ulcers, dermal ulcers, cubitus ulcers, arterial ulcers, venous stasis ulcers, burns resulting from heat exposure or chemicals, and other abnormal wound healing conditions such as uremia, malnutrition, vitamin deficiencies and complications associated with systemic treatment with steroids, radiation therapy and antineoplastic drugs and antimetabolites. Polynucleotides or polypeptides, as well as agonists or

antagonists of the present invention, could be used to promote dermal reestablishment subsequent to dermal loss

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to increase the adherence of skin grafts to a wound bed and to stimulate re-epithelialization from the wound bed. The following are types of grafts that polynucleotides or polypeptides, agonists or antagonists of the present invention, could be used to increase adherence to a wound bed: autografts, artificial skin, allografts, autodermic graft, autoepidermic grafts, avascular grafts, Blair-Brown grafts, bone graft, brephoplastic grafts, cutis graft, delayed graft, dermic graft, epidermic graft, fascia graft, full thickness graft, heterologous graft, xenograft, homologous graft, hyperplastic graft, lamellar graft, mesh graft, mucosal graft, Ollier-Thiersch graft, omentopial graft, patch graft, pedicle graft, penetrating graft, split skin graft, thick split graft. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, can be used to promote skin strength and to improve the appearance of aged skin.

It is believed that polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, will also produce changes in hepatocyte proliferation, and epithelial cell proliferation in the lung, breast, pancreas, stomach, small intestine, and large intestine. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could promote proliferation of epithelial cells such as sebocytes, hair follicles, hepatocytes, type II pneumocytes, mucin-producing goblet cells, and other epithelial cells and their progenitors contained within the skin, lung, liver, and gastrointestinal tract. Polynucleotides or polypeptides, agonists or antagonists of the present invention, may promote proliferation of endothelial cells, keratinocytes, and basal keratinocytes.

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could also be used to reduce the side effects of gut toxicity that result from radiation, chemotherapy treatments or viral infections. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, may have a cytoprotective effect on the small intestine mucosa. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, may also stimulate healing of mucositis (mouth ulcers) that result from chemotherapy and viral infections.

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could further be used in full regeneration of skin in full and partial thickness skin defects, including burns, (i.e., repopulation of hair follicles, sweat glands, and sebaceous glands), treatment of other skin defects such as psoriasis. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to treat epidermolysis bullosa, a defect in adherence of the epidermis to the underlying dermis which results in frequent, open and painful blisters by accelerating reepithelialization of these lesions. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could also be used to treat

gastric and duodenal ulcers and help heal by scar formation of the mucosal lining and regeneration of glandular mucosa and duodenal mucosal lining more rapidly. Inflammatory bowel diseases, such as Crohn's disease and ulcerative colitis, are diseases which result in destruction of the mucosal surface of the small or large intestine, respectively. Thus, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to promote the resurfacing of the mucosal surface to aid more rapid healing and to prevent progression of inflammatory bowel disease. Treatment with polynucleotides or polypeptides, agonists or antagonists of the present invention, is expected to have a significant effect on the production of mucus throughout the gastrointestinal tract and could be used to protect the intestinal mucosa from injurious substances that are ingested or following surgery. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to treat diseases associated with the under expression.

Moreover, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to prevent and heal damage to the lungs due to various pathological states. Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, which could stimulate proliferation and differentiation and promote the repair of alveoli and bronchiolar epithelium to prevent or treat acute or chronic lung damage. For example, emphysema, which results in the progressive loss of alveoli, and inhalation injuries, i.e., resulting from smoke inhalation and burns, that cause necrosis of the bronchiolar epithelium and alveoli could be effectively treated using polynucleotides or polypeptides, agonists or antagonists of the present invention. Also, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to stimulate the proliferation of and differentiation of type II pneumocytes, which may help treat or prevent disease such as hyaline membrane diseases, such as infant respiratory distress syndrome and bronchopulmonary dysplasia, in premature infants.

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could stimulate the proliferation and differentiation of hepatocytes and, thus, could be used to alleviate or treat liver diseases and pathologies such as fulminant liver failure caused by cirrhosis, liver damage caused by viral hepatitis and toxic substances (i.e., acetaminophen, carbon tetrachloride and other hepatotoxins known in the art).

In addition, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to treat or prevent the onset of diabetes mellitus. In patients with newly diagnosed Types I and II diabetes, where some islet cell function remains, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used to maintain the islet function so as to alleviate, delay or prevent permanent manifestation of the disease. Also, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention, could be used as an auxiliary in islet cell transplantation to improve or promote islet cell function.

Gastrointestinal Disorders

Polynucleotides or polypeptides, or agonists or antagonists of the present invention, may be used to detect, prevent, diagnose, prognosticate, treat, and/or ameliorate gastrointestinal diseases and disorders, including inflammatory diseases and/or conditions, infections, cancers (e.g., intestinal neoplasms (carcinoid tumor of the small intestine, non-Hodgkin's lymphoma of the small intestine, small bowel lymphoma)), and ulcers, such as peptic ulcers.

Gastrointestinal disorders include dysphagia, odynophagia, inflammation of the esophagus, peptic esophagitis, gastric reflux, submucosal fibrosis and stricturing, Mallory-Weiss lesions, leiomyomas, lipomas, epidermal cancers, adeoncarcinomas, gastric retention disorders, gastroenteritis, gastric atrophy, gastric/stomach cancers, polyps of the stomach, autoimmune disorders such as pernicious anemia, pyloric stenosis, gastritis (bacterial, viral, eosinophilic, stress-induced, chronic erosive, atrophic, plasma cell, and Ménétrier's), and peritoneal diseases (e.g., chyloperitoneum, hemoperitoneum, mesenteric cyst, mesenteric lymphadenitis, mesenteric vascular occlusion, panniculitis, neoplasms, peritonitis, pneumoperitoneum, bubphrenic abscess,).

Gastrointestinal disorders also include disorders associated with the small intestine, such as malabsorption syndromes, distension, irritable bowel syndrome, sugar intolerance, celiac disease, duodenal ulcers, duodenitis, tropical sprue, Whipple's disease, intestinal lymphangiectasia, Crohn's disease, appendicitis, obstructions of the ileum, Meckel's diverticulum, multiple diverticula, failure of complete rotation of the small and large intestine, lymphoma, and bacterial and parasitic diseases (such as Traveler's diarrhea, typhoid and paratyphoid, cholera, infection by Roundworms (*Ascariasis lumbricoides*), Hookworms (*Ancylostoma duodenale*), Threadworms (*Enterobius vermicularis*), Tapeworms (*Taenia saginata*, *Echinococcus granulosus*, *Diphyllobothrium spp.*, and *T. solium*).

Liver diseases and/or disorders include intrahepatic cholestasis (alagille syndrome, biliary liver cirrhosis), fatty liver (alcoholic fatty liver, reye syndrome), hepatic vein thrombosis, hepatolenticular degeneration, hepatomegaly, hepatopulmonary syndrome, hepatorenal syndrome, portal hypertension (esophageal and gastric varices), liver abscess (amebic liver abscess), liver cirrhosis (alcoholic, biliary and experimental), alcoholic liver diseases (fatty liver, hepatitis, cirrhosis), parasitic (hepatic echinococcosis, fascioliasis, amebic liver abscess), jaundice (hemolytic, hepatocellular, and cholestatic), cholestasis, portal hypertension, liver enlargement, ascites, hepatitis (alcoholic hepatitis, animal hepatitis, chronic hepatitis (autoimmune, hepatitis B, hepatitis C, hepatitis D, drug induced), toxic hepatitis, viral human hepatitis (hepatitis A, hepatitis B, hepatitis C, hepatitis D, hepatitis E), Wilson's disease, granulomatous hepatitis, secondary biliary cirrhosis, hepatic encephalopathy, portal hypertension, varices, hepatic encephalopathy, primary biliary cirrhosis, primary sclerosing cholangitis, hepatocellular adenoma, hemangiomas, bile stones, liver failure (hepatic encephalopathy, acute liver failure), and liver neoplasms

(angiomyolipoma, calcified liver metastases, cystic liver metastases, epithelial tumors, fibrolamellar hepatocarcinoma, focal nodular hyperplasia, hepatic adenoma, hepatobiliary cystadenoma, hepatoblastoma, hepatocellular carcinoma, hepatoma, liver cancer, liver hemangioendothelioma, mesenchymal hamartoma, mesenchymal tumors of liver, nodular
 5 regenerative hyperplasia, benign liver tumors (Hepatic cysts [Simple cysts, Polycystic liver disease, Hepatobiliary cystadenoma, Choledochal cyst], Mesenchymal tumors [Mesenchymal hamartoma, Infantile hemangioendothelioma, Hemangioma, Peliosis hepatis, Lipomas, Inflammatory pseudotumor, Miscellaneous], Epithelial tumors [Bile duct epithelium (Bile duct hamartoma, Bile duct adenoma), Hepatocyte (Adenoma, Focal nodular hyperplasia, Nodular
 10 regenerative hyperplasia)], malignant liver tumors [hepatocellular, hepatoblastoma, hepatocellular carcinoma, cholangiocellular, cholangiocarcinoma, cystadenocarcinoma, tumors of blood vessels, angiosarcoma, Kaposi's sarcoma, hemangioendothelioma, other tumors, embryonal sarcoma, fibrosarcoma, leiomyosarcoma, rhabdomyosarcoma, carcinosarcoma, teratoma, carcinoid, squamous carcinoma, primary lymphoma]), peliosis hepatis, erythrohepatic porphyria, hepatic
 15 porphyria (acute intermittent porphyria, porphyria cutanea tarda), Zellweger syndrome).

Pancreatic diseases and/or disorders include acute pancreatitis, chronic pancreatitis (acute necrotizing pancreatitis, alcoholic pancreatitis), neoplasms (adenocarcinoma of the pancreas, cystadenocarcinoma, insulinoma, gastrinoma, and glucagonoma, cystic neoplasms, islet-cell tumors, pancreoblastoma), and other pancreatic diseases (e.g., cystic fibrosis, cyst (pancreatic
 20 pseudocyst, pancreatic fistula, insufficiency)).

Gallbladder diseases include gallstones (cholelithiasis and choledocholithiasis), postcholecystectomy syndrome, diverticulosis of the gallbladder, acute cholecystitis, chronic cholecystitis, bile duct tumors, and mucocele.

Diseases and/or disorders of the large intestine include antibiotic-associated colitis,
 25 diverticulitis, ulcerative colitis, acquired megacolon, abscesses, fungal and bacterial infections, anorectal disorders (e.g., fissures, hemorrhoids), colonic diseases (colitis, colonic neoplasms [colon cancer, adenomatous colon polyps (e.g., villous adenoma), colon carcinoma, colorectal cancer], colonic diverticulitis, colonic diverticulosis, megacolon [Hirschsprung disease, toxic megacolon]; sigmoid diseases [proctocolitis, sigmoid neoplasms]), constipation, Crohn's disease,
 30 diarrhea (infantile diarrhea, dysentery), duodenal diseases (duodenal neoplasms, duodenal obstruction, duodenal ulcer, duodenitis), enteritis (enterocolitis), HIV enteropathy, ileal diseases (ileal neoplasms, ileitis), immunoproliferative small intestinal disease, inflammatory bowel disease (ulcerative colitis, Crohn's disease), intestinal atresia, parasitic diseases (anisakiasis, balantidiasis, blastocystis infections, cryptosporidiosis, dientamoebiasis, amebic dysentery, giardiasis), intestinal
 35 fistula (rectal fistula), intestinal neoplasms (cecal neoplasms, colonic neoplasms, duodenal neoplasms, ileal neoplasms, intestinal polyps, jejunal neoplasms, rectal neoplasms), intestinal obstruction (afferent loop syndrome, duodenal obstruction, impacted feces, intestinal pseudo-

obstruction [cecal volvulus], intussusception), intestinal perforation, intestinal polyps (colonic polyps, gardner syndrome, peutz-jeghers syndrome), jejunal diseases (jejunal neoplasms), malabsorption syndromes (blind loop syndrome, celiac disease, lactose intolerance, short bowel syndrome, tropical sprue, whipple's disease), mesenteric vascular occlusion, pneumatosis
 5 cystoides intestinalis, protein-losing enteropathies (intestinal lymphangiectasis), rectal diseases (anus diseases, fecal incontinence, hemorrhoids, proctitis, rectal fistula, rectal prolapse, rectocele), peptic ulcer (duodenal ulcer, peptic esophagitis, hemorrhage, perforation, stomach ulcer, Zollinger-Ellison syndrome), postgastrectomy syndromes (dumping syndrome), stomach diseases (e.g., achlorhydria, duodenogastric reflux (bile reflux), gastric antral vascular ectasia, gastric
 10 fistula, gastric outlet obstruction, gastritis (atrophic or hypertrophic), gastroparesis, stomach dilatation, stomach diverticulum, stomach neoplasms (gastric cancer, gastric polyps, gastric adenocarcinoma, hyperplastic gastric polyp), stomach rupture, stomach ulcer, stomach volvulus), tuberculosis, visceroptosis, vomiting (e.g., hematemesis, hyperemesis gravidarum, postoperative nausea and vomiting) and hemorrhagic colitis.

15 Further diseases and/or disorders of the gastrointestinal system include biliary tract diseases, such as, gastroschisis, fistula (e.g., biliary fistula, esophageal fistula, gastric fistula, intestinal fistula, pancreatic fistula), neoplasms (e.g., biliary tract neoplasms, esophageal neoplasms, such as adenocarcinoma of the esophagus, esophageal squamous cell carcinoma, gastrointestinal neoplasms, pancreatic neoplasms, such as adenocarcinoma of the pancreas,
 20 mucinous cystic neoplasm of the pancreas, pancreatic cystic neoplasms, pancreatoblastoma, and peritoneal neoplasms), esophageal disease (e.g., bullous diseases, candidiasis, glycogenic acanthosis, ulceration, barrett esophagus varices, atresia, cyst, diverticulum (e.g., Zenker's diverticulum), fistula (e.g., tracheoesophageal fistula), motility disorders (e.g., CREST syndrome, deglutition disorders, achalasia, spasm, gastroesophageal reflux), neoplasms, perforation (e.g.,
 25 Boerhaave syndrome, Mallory-Weiss syndrome), stenosis, esophagitis, diaphragmatic hernia (e.g., hiatal hernia); gastrointestinal diseases, such as, gastroenteritis (e.g., cholera morbus, norwalk virus infection), hemorrhage (e.g., hematemesis, melena, peptic ulcer hemorrhage), stomach neoplasms (gastric cancer, gastric polyps, gastric adenocarcinoma, stomach cancer)), hernia (e.g., congenital diaphragmatic hernia, femoral hernia, inguinal hernia, obturator hernia, umbilical
 30 hernia, ventral hernia), and intestinal diseases (e.g., cecal diseases (appendicitis, cecal neoplasms)).

Chemotaxis

35 Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention may have chemotaxis activity. A chemotactic molecule attracts or mobilizes cells (e.g., monocytes, fibroblasts, neutrophils, T-cells, mast cells, eosinophils, epithelial and/or endothelial

cells) to a particular site in the body, such as inflammation, infection, or site of hyperproliferation. The mobilized cells can then fight off and/or heal the particular trauma or abnormality.

Polynucleotides or polypeptides, as well as agonists or antagonists of the present invention may increase chemotactic activity of particular cells. These chemotactic molecules can then be used to treat inflammation, infection, hyperproliferative disorders, or any immune system disorder by increasing the number of cells targeted to a particular location in the body. For example, chemotactic molecules can be used to treat wounds and other trauma to tissues by attracting immune cells to the injured location. Chemotactic molecules of the present invention can also attract fibroblasts, which can be used to treat wounds.

It is also contemplated that polynucleotides or polypeptides, as well as agonists or antagonists of the present invention may inhibit chemotactic activity. These molecules could also be used to treat disorders. Thus, polynucleotides or polypeptides, as well as agonists or antagonists of the present invention could be used as an inhibitor of chemotaxis.

Binding Activity

A polypeptide of the present invention may be used to screen for molecules that bind to the polypeptide or for molecules to which the polypeptide binds. The binding of the polypeptide and the molecule may activate (agonist), increase, inhibit (antagonist), or decrease activity of the polypeptide or the molecule bound. Examples of such molecules include antibodies, oligonucleotides, proteins (e.g., receptors), or small molecules.

Preferably, the molecule is closely related to the natural ligand of the polypeptide, e.g., a fragment of the ligand, or a natural substrate, a ligand, a structural or functional mimetic. (See, Coligan et al., Current Protocols in Immunology 1(2):Chapter 5 (1991)). Similarly, the molecule can be closely related to the natural receptor to which the polypeptide binds, or at least, a fragment of the receptor capable of being bound by the polypeptide (e.g., active site). In either case, the molecule can be rationally designed using known techniques.

Preferably, the screening for these molecules involves producing appropriate cells which express the polypeptide. Preferred cells include cells from mammals, yeast, *Drosophila*, or *E. coli*. Cells expressing the polypeptide (or cell membrane containing the expressed polypeptide) are then preferably contacted with a test compound potentially containing the molecule to observe binding, stimulation, or inhibition of activity of either the polypeptide or the molecule.

The assay may simply test binding of a candidate compound to the polypeptide, wherein binding is detected by a label, or in an assay involving competition with a labeled competitor. Further, the assay may test whether the candidate compound results in a signal generated by binding to the polypeptide.

Alternatively, the assay can be carried out using cell-free preparations, polypeptide/molecule affixed to a solid support, chemical libraries, or natural product mixtures.

The assay may also simply comprise the steps of mixing a candidate compound with a solution containing a polypeptide, measuring polypeptide/molecule activity or binding, and comparing the polypeptide/molecule activity or binding to a standard.

Preferably, an ELISA assay can measure polypeptide level or activity in a sample (e.g.,
5 biological sample) using a monoclonal or polyclonal antibody. The antibody can measure polypeptide level or activity by either binding, directly or indirectly, to the polypeptide or by competing with the polypeptide for a substrate.

Additionally, the receptor to which the polypeptide of the present invention binds can be identified by numerous methods known to those of skill in the art, for example, ligand panning and
10 FACS sorting (Coligan, et al., Current Protocols in Immun., 1(2), Chapter 5, (1991)). For example, expression cloning is employed wherein polyadenylated RNA is prepared from a cell responsive to the polypeptides, for example, NIH3T3 cells which are known to contain multiple receptors for the FGF family proteins, and SC-3 cells, and a cDNA library created from this RNA is divided into pools and used to transfect COS cells or other cells that are not responsive to the
15 polypeptides. Transfected cells which are grown on glass slides are exposed to the polypeptide of the present invention, after they have been labeled. The polypeptides can be labeled by a variety of means including iodination or inclusion of a recognition site for a site-specific protein kinase.

Following fixation and incubation, the slides are subjected to auto-radiographic analysis. Positive pools are identified and sub-pools are prepared and re-transfected using an iterative sub-
20 pooling and re-screening process, eventually yielding a single clones that encodes the putative receptor.

As an alternative approach for receptor identification, the labeled polypeptides can be photoaffinity linked with cell membrane or extract preparations that express the receptor molecule. Cross-linked material is resolved by PAGE analysis and exposed to X-ray film. The labeled
25 complex containing the receptors of the polypeptides can be excised, resolved into peptide fragments, and subjected to protein microsequencing. The amino acid sequence obtained from microsequencing would be used to design a set of degenerate oligonucleotide probes to screen a cDNA library to identify the genes encoding the putative receptors.

Moreover, the techniques of gene-shuffling, motif-shuffling, exon-shuffling, and/or
30 codon-shuffling (collectively referred to as "DNA shuffling") may be employed to modulate the activities of the polypeptide of the present invention thereby effectively generating agonists and antagonists of the polypeptide of the present invention. *See generally*, U.S. Patent Nos. 5,605,793, 5,811,238, 5,830,721, 5,834,252, and 5,837,458, and Patten, P. A., *et al.*, *Curr. Opinion Biotechnol.* 8:724-33 (1997); Harayama, S. *Trends Biotechnol.* 16(2):76-82 (1998); Hansson, L. O., *et al.*, *J. Mol. Biol.* 287:265-76 (1999); and Lorenzo, M. M. and Blasco, R. *Biotechniques* 24(2):308-13 (1998); each of these patents and publications are hereby incorporated by reference).
35 In one embodiment, alteration of polynucleotides and corresponding polypeptides may be

achieved by DNA shuffling. DNA shuffling involves the assembly of two or more DNA segments into a desired molecule by homologous, or site-specific, recombination. In another embodiment, polynucleotides and corresponding polypeptides may be altered by being subjected to random mutagenesis by error-prone PCR, random nucleotide insertion or other methods prior to

5 recombination. In another embodiment, one or more components, motifs, sections, parts, domains, fragments, etc., of the polypeptide of the present invention may be recombined with one or more components, motifs, sections, parts, domains, fragments, etc. of one or more heterologous molecules. In preferred embodiments, the heterologous molecules are family members. In further preferred embodiments, the heterologous molecule is a growth factor such as, for example,

10 platelet-derived growth factor (PDGF), insulin-like growth factor (IGF-I), transforming growth factor (TGF)-alpha, epidermal growth factor (EGF), fibroblast growth factor (FGF), TGF-beta, bone morphogenetic protein (BMP)-2, BMP-4, BMP-5, BMP-6, BMP-7, activins A and B, decapentaplegic(dpp), 60A, OP-2, dorsalin, growth differentiation factors (GDFs), nodal, MIS, inhibin-alpha, TGF-beta1, TGF-beta2, TGF-beta3, TGF-beta5, and glial-derived neurotrophic

15 factor (GDNF).

Other preferred fragments are biologically active fragments of the polypeptide of the present invention. Biologically active fragments are those exhibiting activity similar, but not necessarily identical, to an activity of the polypeptide of the present invention. The biological activity of the fragments may include an improved desired activity, or a decreased undesirable

20 activity.

Additionally, this invention provides a method of screening compounds to identify those which modulate the action of the polypeptide of the present invention. An example of such an assay comprises combining a mammalian fibroblast cell, a the polypeptide of the present invention, the compound to be screened and ^3H thymidine under cell culture conditions where

25 the fibroblast cell would normally proliferate. A control assay may be performed in the absence of the compound to be screened and compared to the amount of fibroblast proliferation in the presence of the compound to determine if the compound stimulates proliferation by determining the uptake of ^3H thymidine in each case. The amount of fibroblast cell proliferation is measured by liquid scintillation chromatography which measures the incorporation of ^3H thymidine. Both

30 agonist and antagonist compounds may be identified by this procedure.

In another method, a mammalian cell or membrane preparation expressing a receptor for a polypeptide of the present invention is incubated with a labeled polypeptide of the present invention in the presence of the compound. The ability of the compound to enhance or block this interaction could then be measured. Alternatively, the response of a known second messenger

35 system following interaction of a compound to be screened and the receptor is measured and the ability of the compound to bind to the receptor and elicit a second messenger response is measured

to determine if the compound is a potential agonist or antagonist. Such second messenger systems include but are not limited to, cAMP guanylate cyclase, ion channels or phosphoinositide hydrolysis.

5 All of these above assays can be used as diagnostic or prognostic markers. The molecules discovered using these assays can be used to treat disease or to bring about a particular result in a patient (e.g., blood vessel growth) by activating or inhibiting the polypeptide/molecule. Moreover, the assays can discover agents which may inhibit or enhance the production of the polypeptides of the invention from suitably manipulated cells or tissues.

10 Therefore, the invention includes a method of identifying compounds which bind to a polypeptide of the invention comprising the steps of: (a) incubating a candidate binding compound with a polypeptide of the present invention; and (b) determining if binding has occurred. Moreover, the invention includes a method of identifying agonists/antagonists comprising the steps of: (a) incubating a candidate compound with a polypeptide of the present invention, (b) assaying a biological activity, and (b) determining if a biological activity of the
15 polypeptide has been altered.

Targeted Delivery

In another embodiment, the invention provides a method of delivering compositions to targeted cells expressing a receptor for a polypeptide of the invention, or cells expressing a cell
20 bound form of a polypeptide of the invention.

As discussed herein, polypeptides or antibodies of the invention may be associated with heterologous polypeptides, heterologous nucleic acids, toxins, or prodrugs via hydrophobic, hydrophilic, ionic and/or covalent interactions. In one embodiment, the invention provides a method for the specific delivery of compositions of the invention to cells by administering
25 polypeptides of the invention (including antibodies) that are associated with heterologous polypeptides or nucleic acids. In one example, the invention provides a method for delivering a therapeutic protein into the targeted cell. In another example, the invention provides a method for delivering a single stranded nucleic acid (e.g., antisense or ribozymes) or double stranded nucleic acid (e.g., DNA that can integrate into the cell's genome or replicate episomally and that can be
30 transcribed) into the targeted cell.

In another embodiment, the invention provides a method for the specific destruction of cells (e.g., the destruction of tumor cells) by administering polypeptides of the invention (e.g., polypeptides of the invention or antibodies of the invention) in association with toxins or cytotoxic prodrugs.

35 By "toxin" is meant compounds that bind and activate endogenous cytotoxic effector systems, radioisotopes, holotoxins, modified toxins, catalytic subunits of toxins, or any molecules or enzymes not normally present in or on the surface of a cell that under defined conditions cause

the cell's death. Toxins that may be used according to the methods of the invention include, but are not limited to, radioisotopes known in the art, compounds such as, for example, antibodies (or complement fixing containing portions thereof) that bind an inherent or induced endogenous cytotoxic effector system, thymidine kinase, endonuclease, RNase, alpha toxin, ricin, abrin, *Pseudomonas* exotoxin A, diphtheria toxin, saporin, momordin, gelonin, pokeweed antiviral protein, alpha-sarcin and cholera toxin. By "cytotoxic prodrug" is meant a non-toxic compound that is converted by an enzyme, normally present in the cell, into a cytotoxic compound. Cytotoxic prodrugs that may be used according to the methods of the invention include, but are not limited to, glutamyl derivatives of benzoic acid mustard alkylating agent, phosphate derivatives of etoposide or mitomycin C, cytosine arabinoside, daunorubisin, and phenoxyacetamide derivatives of doxorubicin.

Drug Screening

Further contemplated is the use of the polypeptides of the present invention, or the polynucleotides encoding these polypeptides, to screen for molecules which modify the activities of the polypeptides of the present invention. Such a method would include contacting the polypeptide of the present invention with a selected compound(s) suspected of having antagonist or agonist activity, and assaying the activity of these polypeptides following binding.

This invention is particularly useful for screening therapeutic compounds by using the polypeptides of the present invention, or binding fragments thereof, in any of a variety of drug screening techniques. The polypeptide or fragment employed in such a test may be affixed to a solid support, expressed on a cell surface, free in solution, or located intracellularly. One method of drug screening utilizes eukaryotic or prokaryotic host cells which are stably transformed with recombinant nucleic acids expressing the polypeptide or fragment. Drugs are screened against such transformed cells in competitive binding assays. One may measure, for example, the formulation of complexes between the agent being tested and a polypeptide of the present invention.

Thus, the present invention provides methods of screening for drugs or any other agents which affect activities mediated by the polypeptides of the present invention. These methods comprise contacting such an agent with a polypeptide of the present invention or a fragment thereof and assaying for the presence of a complex between the agent and the polypeptide or a fragment thereof, by methods well known in the art. In such a competitive binding assay, the agents to screen are typically labeled. Following incubation, free agent is separated from that present in bound form, and the amount of free or uncomplexed label is a measure of the ability of a particular agent to bind to the polypeptides of the present invention.

Another technique for drug screening provides high throughput screening for compounds having suitable binding affinity to the polypeptides of the present invention, and is described in great detail in European Patent Application 84/03564, published on September 13, 1984, which is incorporated herein by reference herein. Briefly stated, large numbers of different small peptide
5 test compounds are synthesized on a solid substrate, such as plastic pins or some other surface. The peptide test compounds are reacted with polypeptides of the present invention and washed. Bound polypeptides are then detected by methods well known in the art. Purified polypeptides are coated directly onto plates for use in the aforementioned drug screening techniques. In addition, non-neutralizing antibodies may be used to capture the peptide and immobilize it on the solid
10 support.

This invention also contemplates the use of competitive drug screening assays in which neutralizing antibodies capable of binding polypeptides of the present invention specifically compete with a test compound for binding to the polypeptides or fragments thereof. In this manner, the antibodies are used to detect the presence of any peptide which shares one or more
15 antigenic epitopes with a polypeptide of the invention.

Antisense And Ribozyme (Antagonists)

In specific embodiments, antagonists according to the present invention are nucleic acids corresponding to the sequences contained in SEQ ID NO:X, or the complementary strand thereof,
20 and/or to cDNA sequences contained in cDNA ATCC Deposit No:Z identified for example, in Table 1A and/or 1B. In one embodiment, antisense sequence is generated internally, by the organism, in another embodiment, the antisense sequence is separately administered (see, for example, O'Connor, J., Neurochem. 56:560 (1991). Oligodeoxynucleotides as Antisense Inhibitors of Gene Expression, CRC Press, Boca Raton, FL (1988). Antisense technology can be
25 used to control gene expression through antisense DNA or RNA, or through triple-helix formation. Antisense techniques are discussed for example, in Okano, J., Neurochem. 56:560 (1991); Oligodeoxynucleotides as Antisense Inhibitors of Gene Expression, CRC Press, Boca Raton, FL (1988). Triple helix formation is discussed in, for instance, Lee et al., Nucleic Acids Research 6:3073 (1979); Cooney et al., Science 241:456 (1988); and Dervan et al., Science 251:1300
30 (1991). The methods are based on binding of a polynucleotide to a complementary DNA or RNA.

For example, the use of c-myc and c-myb antisense RNA constructs to inhibit the growth of the non-lymphocytic leukemia cell line HL-60 and other cell lines was previously described. (Wickstrom et al. (1988); Anfossi et al. (1989)). These experiments were performed *in vitro* by incubating cells with the oligoribonucleotide. A similar procedure for *in vivo* use is described in
35 WO 91/15580. Briefly, a pair of oligonucleotides for a given antisense RNA is produced as follows: A sequence complimentary to the first 15 bases of the open reading frame is flanked by an EcoR1 site on the 5' end and a HindIII site on the 3' end. Next, the pair of oligonucleotides is

heated at 90°C for one minute and then annealed in 2X ligation buffer (20mM TRIS HCl pH 7.5, 10mM MgCl₂, 10mM dithiothreitol (DTT) and 0.2 mM ATP) and then ligated to the EcoRI/Hind III site of the retroviral vector PMV7 (WO 91/15580).

For example, the 5' coding portion of a polynucleotide that encodes the polypeptide of the present invention may be used to design an antisense RNA oligonucleotide of from about 10 to 40 base pairs in length. A DNA oligonucleotide is designed to be complementary to a region of the gene involved in transcription thereby preventing transcription and the production of the receptor. The antisense RNA oligonucleotide hybridizes to the mRNA *in vivo* and blocks translation of the mRNA molecule into receptor polypeptide.

In one embodiment, the antisense nucleic acid of the invention is produced intracellularly by transcription from an exogenous sequence. For example, a vector or a portion thereof, is transcribed, producing an antisense nucleic acid (RNA) of the invention. Such a vector would contain a sequence encoding the antisense nucleic acid. Such a vector can remain episomal or become chromosomally integrated, as long as it can be transcribed to produce the desired antisense RNA. Such vectors can be constructed by recombinant DNA technology methods standard in the art. Vectors can be plasmid, viral, or others known in the art, used for replication and expression in vertebrate cells. Expression of the sequence encoding the polypeptide of the present invention or fragments thereof, can be by any promoter known in the art to act in vertebrate, preferably human cells. Such promoters can be inducible or constitutive. Such promoters include, but are not limited to, the SV40 early promoter region (Bernoist and Chambon, Nature 29:304-310 (1981), the promoter contained in the 3' long terminal repeat of Rous sarcoma virus (Yamamoto et al., Cell 22:787-797 (1980), the herpes thymidine promoter (Wagner et al., Proc. Natl. Acad. Sci. U.S.A. 78:1441-1445 (1981), the regulatory sequences of the metallothionein gene (Brinster, et al., Nature 296:39-42 (1982)), etc.

The antisense nucleic acids of the invention comprise a sequence complementary to at least a portion of an RNA transcript of a gene of the present invention. However, absolute complementarity, although preferred, is not required. A sequence "complementary to at least a portion of an RNA," referred to herein, means a sequence having sufficient complementarity to be able to hybridize with the RNA, forming a stable duplex; in the case of double stranded antisense nucleic acids, a single strand of the duplex DNA may thus be tested, or triplex formation may be assayed. The ability to hybridize will depend on both the degree of complementarity and the length of the antisense nucleic acid. Generally, the larger the hybridizing nucleic acid, the more base mismatches with a RNA it may contain and still form a stable duplex (or triplex as the case may be). One skilled in the art can ascertain a tolerable degree of mismatch by use of standard procedures to determine the melting point of the hybridized complex.

Oligonucleotides that are complementary to the 5' end of the message, e.g., the 5' untranslated sequence up to and including the AUG initiation codon, should work most efficiently

at inhibiting translation. However, sequences complementary to the 3' untranslated sequences of mRNAs have been shown to be effective at inhibiting translation of mRNAs as well. See generally, Wagner, R., 1994, Nature 372:333-335. Thus, oligonucleotides complementary to either the 5'- or 3'- non- translated, non-coding regions of polynucleotide sequences described
 5 herein could be used in an antisense approach to inhibit translation of endogenous mRNA. Oligonucleotides complementary to the 5' untranslated region of the mRNA should include the complement of the AUG start codon. Antisense oligonucleotides complementary to mRNA coding regions are less efficient inhibitors of translation but could be used in accordance with the invention. Whether designed to hybridize to the 5', 3'- or coding region of mRNA of the present
 10 invention, antisense nucleic acids should be at least six nucleotides in length, and are preferably oligonucleotides ranging from 6 to about 50 nucleotides in length. In specific aspects the oligonucleotide is at least 10 nucleotides, at least 17 nucleotides, at least 25 nucleotides or at least 50 nucleotides.

The polynucleotides of the invention can be DNA or RNA or chimeric mixtures or
 15 derivatives or modified versions thereof, single-stranded or double-stranded. The oligonucleotide can be modified at the base moiety, sugar moiety, or phosphate backbone, for example, to improve stability of the molecule, hybridization, etc. The oligonucleotide may include other appended groups such as peptides (e.g., for targeting host cell receptors *in vivo*), or agents facilitating transport across the cell membrane (see, e.g., Letsinger et al., 1989, Proc. Natl. Acad. Sci. U.S.A.
 20 86:6553-6556; Lemaitre et al., 1987, Proc. Natl. Acad. Sci. 84:648-652; PCT Publication No. WO88/09810, published December 15, 1988) or the blood-brain barrier (see, e.g., PCT Publication No. WO89/10134, published April 25, 1988), hybridization-triggered cleavage agents. (See, e.g., Krol et al., 1988, BioTechniques 6:958-976) or intercalating agents. (See, e.g., Zon, 1988, Pharm.
 Res. 5:539-549). To this end, the oligonucleotide may be conjugated to another molecule, e.g., a
 25 peptide, hybridization triggered cross-linking agent, transport agent, hybridization-triggered cleavage agent, etc.

The antisense oligonucleotide may comprise at least one modified base moiety which is selected from the group including, but not limited to, 5-fluorouracil, 5-bromouracil, 5-chlorouracil, 5-iodouracil, hypoxanthine, xantine, 4-acetylcytosine, 5-(carboxyhydroxymethyl) uracil,
 30 5-carboxymethylaminomethyl-2-thiouridine, 5-carboxymethylaminomethyluracil, dihydrouracil, beta-D-galactosylqueosine, inosine, N6-isopentenyladenine, 1-methylguanine, 1-methylinosine, 2,2-dimethylguanine, 2-methyladenine, 2-methylguanine, 3-methylcytosine, 5-methylcytosine, N6-adenine, 7-methylguanine, 5-methylaminomethyluracil, 5-methoxyaminomethyl-2-thiouracil, beta-D-mannosylqueosine, 5'-methoxycarboxymethyluracil, 5-methoxyuracil, 2-methylthio-N6-
 35 isopentenyladenine, uracil-5-oxyacetic acid (v), wybutoxosine, pseudouracil, queosine, 2-thiocytosine, 5-methyl-2-thiouracil, 2-thiouracil, 4-thiouracil, 5-methyluracil, uracil-5-oxyacetic acid methylester, uracil-5-oxyacetic acid (v), 5-methyl-2-thiouracil, 3-(3-amino-3-N-2-

carboxypropyl) uracil, (acp3)w, and 2,6-diaminopurine.

The antisense oligonucleotide may also comprise at least one modified sugar moiety selected from the group including, but not limited to, arabinose, 2-fluoroarabinose, xylulose, and hexose.

5 In yet another embodiment, the antisense oligonucleotide comprises at least one modified phosphate backbone selected from the group including, but not limited to, a phosphorothioate, a phosphorodithioate, a phosphoramidothioate, a phosphoramidate, a phosphordiamidate, a methylphosphonate, an alkyl phosphotriester, and a formacetal or analog thereof.

10 In yet another embodiment, the antisense oligonucleotide is an a-anomeric oligonucleotide. An a-anomeric oligonucleotide forms specific double-stranded hybrids with complementary RNA in which, contrary to the usual b-units, the strands run parallel to each other (Gautier et al., 1987, Nucl. Acids Res. 15:6625-6641). The oligonucleotide is a 2'-O-methylribonucleotide (Inoue et al., 1987, Nucl. Acids Res. 15:6131-6148), or a chimeric RNA-DNA analogue (Inoue et al., 1987, FEBS Lett. 215:327-330).

15 Polynucleotides of the invention may be synthesized by standard methods known in the art, e.g. by use of an automated DNA synthesizer (such as are commercially available from Biosearch, Applied Biosystems, etc.). As examples, phosphorothioate oligonucleotides may be synthesized by the method of Stein et al. (1988, Nucl. Acids Res. 16:3209), methylphosphonate oligonucleotides can be prepared by use of controlled pore glass polymer supports (Sarin et al., 20 1988, Proc. Natl. Acad. Sci. U.S.A. 85:7448-7451), etc.

While antisense nucleotides complementary to the coding region sequence could be used, those complementary to the transcribed untranslated region are most preferred.

Potential antagonists according to the invention also include catalytic RNA, or a ribozyme (See, e.g., PCT International Publication WO 90/11364, published October 4, 1990; Sarver et al, 25 Science 247:1222-1225 (1990). While ribozymes that cleave mRNA at site specific recognition sequences can be used to destroy mRNAs, the use of hammerhead ribozymes is preferred. Hammerhead ribozymes cleave mRNAs at locations dictated by flanking regions that form complementary base pairs with the target mRNA. The sole requirement is that the target mRNA have the following sequence of two bases: 5'-UG-3'. The construction and production of 30 hammerhead ribozymes is well known in the art and is described more fully in Haseloff and Gerlach, Nature 334:585-591 (1988). There are numerous potential hammerhead ribozyme cleavage sites within the nucleotide sequence of SEQ ID NO:X. Preferably, the ribozyme is engineered so that the cleavage recognition site is located near the 5' end of the mRNA; i.e., to increase efficiency and minimize the intracellular accumulation of non-functional mRNA 35 transcripts.

As in the antisense approach, the ribozymes of the invention can be composed of modified oligonucleotides (e.g., for improved stability, targeting, etc.) and should be delivered to cells

which express *in vivo*. DNA constructs encoding the ribozyme may be introduced into the cell in the same manner as described above for the introduction of antisense encoding DNA. A preferred method of delivery involves using a DNA construct "encoding" the ribozyme under the control of a strong constitutive promoter, such as, for example, pol III or pol II promoter, so that transfected
5 cells will produce sufficient quantities of the ribozyme to destroy endogenous messages and inhibit translation. Since ribozymes unlike antisense molecules, are catalytic, a lower intracellular concentration is required for efficiency.

Antagonist/agonist compounds may be employed to inhibit the cell growth and proliferation effects of the polypeptides of the present invention on neoplastic cells and tissues, i.e.
10 stimulation of angiogenesis of tumors, and, therefore, retard or prevent abnormal cellular growth and proliferation, for example, in tumor formation or growth.

The antagonist/agonist may also be employed to prevent hyper-vascular diseases, and prevent the proliferation of epithelial lens cells after extracapsular cataract surgery. Prevention of the mitogenic activity of the polypeptides of the present invention may also be desirable in cases
15 such as restenosis after balloon angioplasty.

The antagonist/agonist may also be employed to prevent the growth of scar tissue during wound healing.

The antagonist/agonist may also be employed to treat the diseases described herein.

Thus, the invention provides a method of treating disorders or diseases, including but not
20 limited to the disorders or diseases listed throughout this application, associated with overexpression of a polynucleotide of the present invention by administering to a patient (a) an antisense molecule directed to the polynucleotide of the present invention, and/or (b) a ribozyme directed to the polynucleotide of the present invention.

25 Binding Peptides and Other Molecules

The invention also encompasses screening methods for identifying polypeptides and nonpolypeptides that bind polypeptides of the invention, and the binding molecules identified thereby. These binding molecules are useful, for example, as agonists and antagonists of the polypeptides of the invention. Such agonists and antagonists can be used, in accordance with the
30 invention, in the therapeutic embodiments described in detail, below.

This method comprises the steps of:

contacting polypeptides of the invention with a plurality of molecules; and
identifying a molecule that binds the polypeptides of the invention.

The step of contacting the polypeptides of the invention with the plurality of molecules
35 may be effected in a number of ways. For example, one may contemplate immobilizing the polypeptides on a solid support and bringing a solution of the plurality of molecules in contact with the immobilized polypeptides. Such a procedure would be akin to an affinity

chromatographic process, with the affinity matrix being comprised of the immobilized polypeptides of the invention. The molecules having a selective affinity for the polypeptides can then be purified by affinity selection. The nature of the solid support, process for attachment of the polypeptides to the solid support, solvent, and conditions of the affinity isolation or selection are largely conventional and well known to those of ordinary skill in the art.

Alternatively, one may also separate a plurality of polypeptides into substantially separate fractions comprising a subset of or individual polypeptides. For instance, one can separate the plurality of polypeptides by gel electrophoresis, column chromatography, or like method known to those of ordinary skill for the separation of polypeptides. The individual polypeptides can also be produced by a transformed host cell in such a way as to be expressed on or about its outer surface (e.g., a recombinant phage). Individual isolates can then be "probed" by the polypeptides of the invention, optionally in the presence of an inducer should one be required for expression, to determine if any selective affinity interaction takes place between the polypeptides and the individual clone. Prior to contacting the polypeptides with each fraction comprising individual polypeptides, the polypeptides could first be transferred to a solid support for additional convenience. Such a solid support may simply be a piece of filter membrane, such as one made of nitrocellulose or nylon. In this manner, positive clones could be identified from a collection of transformed host cells of an expression library, which harbor a DNA construct encoding a polypeptide having a selective affinity for polypeptides of the invention. Furthermore, the amino acid sequence of the polypeptide having a selective affinity for the polypeptides of the invention can be determined directly by conventional means or the coding sequence of the DNA encoding the polypeptide can frequently be determined more conveniently. The primary sequence can then be deduced from the corresponding DNA sequence. If the amino acid sequence is to be determined from the polypeptide itself, one may use microsequencing techniques. The sequencing technique may include mass spectroscopy.

In certain situations, it may be desirable to wash away any unbound polypeptides from a mixture of the polypeptides of the invention and the plurality of polypeptides prior to attempting to determine or to detect the presence of a selective affinity interaction. Such a wash step may be particularly desirable when the polypeptides of the invention or the plurality of polypeptides are bound to a solid support.

The plurality of molecules provided according to this method may be provided by way of diversity libraries, such as random or combinatorial peptide or nonpeptide libraries which can be screened for molecules that specifically bind polypeptides of the invention. Many libraries are known in the art that can be used, e.g., chemically synthesized libraries, recombinant (e.g., phage display libraries), and in vitro translation-based libraries. Examples of chemically synthesized libraries are described in Fodor et al., 1991, *Science* 251:767-773; Houghten et al., 1991, *Nature* 354:84-86; Lam et al., 1991, *Nature* 354:82-84; Medynski, 1994, *Bio/Technology* 12:709-

710; Gallop et al., 1994, *J. Medicinal Chemistry* 37(9):1233-1251; Ohlmeyer et al., 1993, *Proc. Natl. Acad. Sci. USA* 90:10922-10926; Erb et al., 1994, *Proc. Natl. Acad. Sci. USA* 91:11422-11426; Houghten et al., 1992, *Biotechniques* 13:412; Jayawickreme et al., 1994, *Proc. Natl. Acad. Sci. USA* 91:1614-1618; Salmon et al., 1993, *Proc. Natl. Acad. Sci. USA* 90:11708-11712; PCT
5 Publication No. WO 93/20242; and Brenner and Lerner, 1992, *Proc. Natl. Acad. Sci. USA* 89:5381-5383.

Examples of phage display libraries are described in Scott and Smith, 1990, *Science* 249:386-390; Devlin et al., 1990, *Science*, 249:404-406; Christian, R. B., et al., 1992, *J. Mol. Biol.* 227:711-718; Lenstra, 1992, *J. Immunol. Meth.* 152:149-157; Kay et al., 1993, *Gene* 128:59-65;
10 and PCT Publication No. WO 94/18318 dated Aug. 18, 1994.

In vitro translation-based libraries include but are not limited to those described in PCT Publication No. WO 91/05058 dated Apr. 18, 1991; and Mattheakis et al., 1994, *Proc. Natl. Acad. Sci. USA* 91:9022-9026.

By way of examples of nonpeptide libraries, a benzodiazepine library (see e.g., Bunin et al., 1994, *Proc. Natl. Acad. Sci. USA* 91:4708-4712) can be adapted for use. Peptoid libraries (Simon et al., 1992, *Proc. Natl. Acad. Sci. USA* 89:9367-9371) can also be used. Another example of a library that can be used, in which the amide functionalities in peptides have been permethylated to generate a chemically transformed combinatorial library, is described by Ostresh et al. (1994, *Proc. Natl. Acad. Sci. USA* 91:11138-11142).
15

The variety of non-peptide libraries that are useful in the present invention is great. For example, Ecker and Crooke, 1995, *Bio/Technology* 13:351-360 list benzodiazepines, hydantoin, piperazinediones, biphenyls, sugar analogs, beta-mercaptoketones, arylacetic acids, acylpiperidines, benzopyrans, cubanes, xanthines, aminimides, and oxazolones as among the chemical species that form the basis of various libraries.
20

Non-peptide libraries can be classified broadly into two types: decorated monomers and oligomers. Decorated monomer libraries employ a relatively simple scaffold structure upon which a variety of functional groups is added. Often the scaffold will be a molecule with a known useful pharmacological activity. For example, the scaffold might be the benzodiazepine structure.
25

Non-peptide oligomer libraries utilize a large number of monomers that are assembled together in ways that create new shapes that depend on the order of the monomers. Among the monomer units that have been used are carbamates, pyrrolinones, and morpholinos. Peptoids, peptide-like oligomers in which the side chain is attached to the alpha amino group rather than the alpha carbon, form the basis of another version of non-peptide oligomer libraries. The first non-peptide oligomer libraries utilized a single type of monomer and thus contained a repeating backbone. Recent libraries have utilized more than one monomer, giving the libraries added flexibility.
30
35

Screening the libraries can be accomplished by any of a variety of commonly known

methods. See, e.g., the following references, which disclose screening of peptide libraries: Parmley and Smith, 1989, *Adv. Exp. Med. Biol.* 251:215-218; Scott and Smith, 1990, *Science* 249:386-390; Fowlkes et al., 1992; *BioTechniques* 13:422-427; Oldenburg et al., 1992, *Proc. Natl. Acad. Sci. USA* 89:5393-5397; Yu et al., 1994, *Cell* 76:933-945; Staudt et al., 1988, *Science* 241:577-580; Bock et al., 1992, *Nature* 355:564-566; Tuerk et al., 1992, *Proc. Natl. Acad. Sci. USA* 89:6988-6992; Ellington et al., 1992, *Nature* 355:850-852; U.S. Pat. No. 5,096,815, U.S. Pat. No. 5,223,409, and U.S. Pat. No. 5,198,346, all to Ladner et al.; Rebar and Pabo, 1993, *Science* 263:671-673; and CT Publication No. WO 94/18318.

In a specific embodiment, screening to identify a molecule that binds polypeptides of the invention can be carried out by contacting the library members with polypeptides of the invention immobilized on a solid phase and harvesting those library members that bind to the polypeptides of the invention. Examples of such screening methods, termed "panning" techniques are described by way of example in Parmley and Smith, 1988, *Gene* 73:305-318; Fowlkes et al., 1992, *BioTechniques* 13:422-427; PCT Publication No. WO 94/18318; and in references cited herein.

In another embodiment, the two-hybrid system for selecting interacting proteins in yeast (Fields and Song, 1989, *Nature* 340:245-246; Chien et al., 1991, *Proc. Natl. Acad. Sci. USA* 88:9578-9582) can be used to identify molecules that specifically bind to polypeptides of the invention.

Where the binding molecule is a polypeptide, the polypeptide can be conveniently selected from any peptide library, including random peptide libraries, combinatorial peptide libraries, or biased peptide libraries. The term "biased" is used herein to mean that the method of generating the library is manipulated so as to restrict one or more parameters that govern the diversity of the resulting collection of molecules, in this case peptides.

Thus, a truly random peptide library would generate a collection of peptides in which the probability of finding a particular amino acid at a given position of the peptide is the same for all 20 amino acids. A bias can be introduced into the library, however, by specifying, for example, that a lysine occur every fifth amino acid or that positions 4, 8, and 9 of a decapeptide library be fixed to include only arginine. Clearly, many types of biases can be contemplated, and the present invention is not restricted to any particular bias. Furthermore, the present invention contemplates specific types of peptide libraries, such as phage displayed peptide libraries and those that utilize a DNA construct comprising a lambda phage vector with a DNA insert.

As mentioned above, in the case of a binding molecule that is a polypeptide, the polypeptide may have about 6 to less than about 60 amino acid residues, preferably about 6 to about 10 amino acid residues, and most preferably, about 6 to about 22 amino acids. In another embodiment, a binding polypeptide has in the range of 15-100 amino acids, or 20-50 amino acids.

The selected binding polypeptide can be obtained by chemical synthesis or recombinant expression.

Other Activities

A polypeptide, polynucleotide, agonist, or antagonist of the present invention, as a result of the ability to stimulate vascular endothelial cell growth, may be employed in treatment for stimulating re-vascularization of ischemic tissues due to various disease conditions such as thrombosis, arteriosclerosis, and other cardiovascular conditions. The polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed to stimulate angiogenesis and limb regeneration, as discussed above.

A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed for treating wounds due to injuries, burns, post-operative tissue repair, and ulcers since they are mitogenic to various cells of different origins, such as fibroblast cells and skeletal muscle cells, and therefore, facilitate the repair or replacement of damaged or diseased tissue.

A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed stimulate neuronal growth and to treat and prevent neuronal damage which occurs in certain neuronal disorders or neuro-degenerative conditions such as Alzheimer's disease, Parkinson's disease, and AIDS-related complex. A polypeptide, polynucleotide, agonist, or antagonist of the present invention may have the ability to stimulate chondrocyte growth, therefore, they may be employed to enhance bone and periodontal regeneration and aid in tissue transplants or bone grafts.

A polypeptide, polynucleotide, agonist, or antagonist of the present invention may be also be employed to prevent skin aging due to sunburn by stimulating keratinocyte growth.

A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed for preventing hair loss, since FGF family members activate hair-forming cells and promotes melanocyte growth. Along the same lines, a polypeptide, polynucleotide, agonist, or antagonist of the present invention may be employed to stimulate growth and differentiation of hematopoietic cells and bone marrow cells when used in combination with other cytokines.

A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed to maintain organs before transplantation or for supporting cell culture of primary tissues. A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be employed for inducing tissue of mesodermal origin to differentiate in early embryos.

A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also increase or decrease the differentiation or proliferation of embryonic stem cells, besides, as discussed above, hematopoietic lineage.

A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be used to modulate mammalian characteristics, such as body height, weight, hair color, eye color, skin, percentage of adipose tissue, pigmentation, size, and shape (e.g., cosmetic surgery). Similarly, a polypeptide, polynucleotide, agonist, or antagonist of the present invention may be

used to modulate mammalian metabolism affecting catabolism, anabolism, processing, utilization, and storage of energy.

5 A polypeptide, polynucleotide, agonist, or antagonist of the present invention may be used to change a mammal's mental state or physical state by influencing biorhythms, cardiac rhythms, depression (including depressive disorders), tendency for violence, tolerance for pain, reproductive capabilities (preferably by Activin or Inhibin-like activity), hormonal or endocrine levels, appetite, libido, memory, stress, or other cognitive qualities.

10 A polypeptide, polynucleotide, agonist, or antagonist of the present invention may also be used as a food additive or preservative, such as to increase or decrease storage capabilities, fat content, lipid, protein, carbohydrate, vitamins, minerals, cofactors or other nutritional components.

The above-recited applications have uses in a wide variety of hosts. Such hosts include, but are not limited to, human, murine, rabbit, goat, guinea pig, camel, horse, mouse, rat, hamster, pig, micro-pig, chicken, goat, cow, sheep, dog, cat, non-human primate, and human. In specific embodiments, the host is a mouse, rabbit, goat, guinea pig, chicken, rat, hamster, pig, sheep, dog
15 or cat. In preferred embodiments, the host is a mammal. In most preferred embodiments, the host is a human.

Other Preferred Embodiments

20 Other preferred embodiments of the claimed invention include an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least about 50 contiguous nucleotides in the nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, the nucleotide sequence as defined in Table 1B or columns 8 and 9 of Table 2 or the complementary strand thereto, and/or cDNA contained in ATCC Deposit No:Z.

25 Also preferred is a nucleic acid molecule wherein said sequence of contiguous nucleotides is included in the nucleotide sequence of the portion of SEQ ID NO:X as defined in column 5, "ORF (From-To)", in Table 1B.1.

Also preferred is a nucleic acid molecule wherein said sequence of contiguous nucleotides is included in the nucleotide sequence of the portion of SEQ ID NO:X as defined in columns 8 and 9, "NT From" and "NT To" respectively, in Table 2.

30 Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least about 150 contiguous nucleotides in the nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, the nucleotide sequence as defined in Table 1B or columns 8 and 9 of Table 2 or the complementary strand thereto, and/or cDNA contained in ATCC Deposit No:Z.

35 Further preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least about 500 contiguous nucleotides in the nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, the nucleotide

sequence as defined in Table 1B or columns 8 and 9 of Table 2 or the complementary strand thereto, and/or cDNA contained in ATCC Deposit No:Z.

5 A further preferred embodiment is a nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the nucleotide sequence of the portion of SEQ ID NO:X defined in column 5, "ORF (From-To)", in Table 1B.1.

A further preferred embodiment is a nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the nucleotide sequence of the portion of SEQ ID NO:X defined in columns 8 and 9, "NT From" and "NT To", respectively, in Table 2.

10 A further preferred embodiment is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the complete nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, the nucleotide sequence as defined in column 5 of Table 1B.1 or columns 8 and 9 of Table 2 or the complementary strand thereto, and/or cDNA contained in ATCC Deposit No:Z.

15 Also preferred is an isolated nucleic acid molecule which hybridizes under stringent hybridization conditions to a nucleic acid molecule comprising a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto, the nucleotide sequence as defined in column 5 of Table 1B.1 or columns 8 and 9 of Table 2 or the complementary strand thereto, and/or cDNA contained in ATCC Deposit No:Z, wherein said nucleic acid molecule which hybridizes does not hybridize under stringent hybridization conditions to a nucleic acid molecule having a nucleotide
20 sequence consisting of only A residues or of only T residues.

Also preferred is a composition of matter comprising a DNA molecule which comprises the cDNA contained in ATCC Deposit No:Z.

Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least 50 contiguous nucleotides of the cDNA
25 sequence contained in ATCC Deposit No:Z.

Also preferred is an isolated nucleic acid molecule, wherein said sequence of at least 50 contiguous nucleotides is included in the nucleotide sequence of an open reading frame sequence encoded by cDNA contained in ATCC Deposit No:Z.

Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence
30 which is at least 95% identical to sequence of at least 150 contiguous nucleotides in the nucleotide sequence encoded by cDNA contained in ATCC Deposit No:Z.

A further preferred embodiment is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to sequence of at least 500 contiguous nucleotides in the nucleotide sequence encoded by cDNA contained in ATCC Deposit No:Z.

35 A further preferred embodiment is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to the complete nucleotide sequence encoded by cDNA contained in ATCC Deposit No:Z.

A further preferred embodiment is a method for detecting in a biological sample a nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; the nucleotide sequence as
5 defined in column 5 of Table 1B.1 or columns 8 and 9 of Table 2 or the complementary strand thereto; and a nucleotide sequence encoded by cDNA contained in ATCC Deposit No:Z; which method comprises a step of comparing a nucleotide sequence of at least one nucleic acid molecule in said sample with a sequence selected from said group and determining whether the sequence of said nucleic acid molecule in said sample is at least 95% identical to said selected sequence.

10 Also preferred is the above method wherein said step of comparing sequences comprises determining the extent of nucleic acid hybridization between nucleic acid molecules in said sample and a nucleic acid molecule comprising said sequence selected from said group. Similarly, also preferred is the above method wherein said step of comparing sequences is performed by comparing the nucleotide sequence determined from a nucleic acid molecule in said sample with
15 said sequence selected from said group. The nucleic acid molecules can comprise DNA molecules or RNA molecules.

A further preferred embodiment is a method for identifying the species, tissue or cell type of a biological sample which method comprises a step of detecting nucleic acid molecules in said sample, if any, comprising a nucleotide sequence that is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide
20 sequence of SEQ ID NO:X or the complementary strand thereto; the nucleotide sequence as defined in column 5 of Table 1B.1 or columns 8 and 9 of Table 2 or the complementary strand thereto; and a nucleotide sequence of the cDNA contained in ATCC Deposit No:Z.

The method for identifying the species, tissue or cell type of a biological sample can
25 comprise a step of detecting nucleic acid molecules comprising a nucleotide sequence in a panel of at least two nucleotide sequences, wherein at least one sequence in said panel is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from said group.

Also preferred is a method for diagnosing in a subject a pathological condition associated
30 with abnormal structure or expression of a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; the nucleotide sequence as defined in column 5 of Table 1B.1 or columns 8 and 9 of Table 2 or the complementary strand thereto; or the cDNA contained in ATCC Deposit No:Z which encodes a protein, wherein the method comprises a step of detecting in a biological sample obtained from said subject nucleic acid molecules, if any, comprising a
35 nucleotide sequence that is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; the nucleotide sequence as defined in column 5 of

Table 1B.1 or columns 8 and 9 of Table 2 or the complementary strand thereto; and a nucleotide sequence of cDNA contained in ATCC Deposit No:Z.

The method for diagnosing a pathological condition can comprise a step of detecting nucleic acid molecules comprising a nucleotide sequence in a panel of at least two nucleotide sequences, wherein at least one sequence in said panel is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from said group.

Also preferred is a composition of matter comprising isolated nucleic acid molecules wherein the nucleotide sequences of said nucleic acid molecules comprise a panel of at least two nucleotide sequences, wherein at least one sequence in said panel is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X or the complementary strand thereto; the nucleotide sequence as defined in column 5 of Table 1B.1 or columns 8 and 9 of Table 2 or the complementary strand thereto; and a nucleotide sequence encoded by cDNA contained in ATCC Deposit No:Z. The nucleic acid molecules can comprise DNA molecules or RNA molecules.

Also preferred is a composition of matter comprising isolated nucleic acid molecules wherein the nucleotide sequences of said nucleic acid molecules comprise a DNA microarray or "chip" of at least 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 40, 50, 100, 150, 200, 250, 300, 500, 1000, 2000, 3000, or 4000 nucleotide sequences, wherein at least one sequence in said DNA microarray or "chip" is at least 95% identical to a sequence of at least 50 contiguous nucleotides in a sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:X wherein X is any integer as defined in Table 1A and/or 1B; and a nucleotide sequence encoded by a human cDNA clone identified by a cDNA "Clone ID" in Table 1A and/or 1B.

Also preferred is an isolated polypeptide comprising an amino acid sequence at least 90% identical to a sequence of at least about 10 contiguous amino acids in the polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and/or a polypeptide encoded by cDNA contained in ATCC Deposit No:Z.

Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 30 contiguous amino acids in the amino acid sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and/or a polypeptide encoded by cDNA contained in ATCC Deposit No:Z.

Further preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 100 contiguous amino acids in the amino acid sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and/or a polypeptide encoded by cDNA contained in ATCC Deposit No:Z.

Further preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to the complete amino acid sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and/or a polypeptide encoded by cDNA contained in ATCC Deposit No:Z.

Further preferred is an isolated polypeptide comprising an amino acid sequence at least 90% identical to a sequence of at least about 10 contiguous amino acids in the complete amino acid sequence of a polypeptide encoded by contained in ATCC Deposit No:Z

Also preferred is a polypeptide wherein said sequence of contiguous amino acids is included in the amino acid sequence of a portion of said polypeptide encoded by cDNA contained in ATCC Deposit No:Z; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and/or the polypeptide sequence of SEQ ID NO:Y.

Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 30 contiguous amino acids in the amino acid sequence of a polypeptide encoded by the cDNA contained in ATCC Deposit No:Z.

Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence of at least about 100 contiguous amino acids in the amino acid sequence of a polypeptide encoded by cDNA contained in ATCC Deposit No:Z.

Also preferred is an isolated polypeptide comprising an amino acid sequence at least 95% identical to the amino acid sequence of a polypeptide encoded by the cDNA contained in ATCC Deposit No:Z.

Further preferred is an isolated antibody which binds specifically to a polypeptide comprising an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: a polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in ATCC Deposit No:Z.

Further preferred is a method for detecting in a biological sample a polypeptide comprising an amino acid sequence which is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: a polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in ATCC Deposit No:Z; which method comprises a step of comparing an amino acid sequence of at least one polypeptide molecule in said sample with a sequence selected from said group and determining whether the

sequence of said polypeptide molecule in said sample is at least 90% identical to said sequence of at least 10 contiguous amino acids.

Also preferred is the above method wherein said step of comparing an amino acid sequence of at least one polypeptide molecule in said sample with a sequence selected from said group comprises determining the extent of specific binding of polypeptides in said sample to an antibody which binds specifically to a polypeptide comprising an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: a polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in ATCC Deposit No:Z.

Also preferred is the above method wherein said step of comparing sequences is performed by comparing the amino acid sequence determined from a polypeptide molecule in said sample with said sequence selected from said group.

Also preferred is a method for identifying the species, tissue or cell type of a biological sample which method comprises a step of detecting polypeptide molecules in said sample, if any, comprising an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in ATCC Deposit No:Z.

Also preferred is the above method for identifying the species, tissue or cell type of a biological sample, which method comprises a step of detecting polypeptide molecules comprising an amino acid sequence in a panel of at least two amino acid sequences, wherein at least one sequence in said panel is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the above group.

Also preferred is a method for diagnosing in a subject a pathological condition associated with abnormal structure or expression of a nucleic acid sequence identified in Table 1A, 1B or Table 2 encoding a polypeptide, which method comprises a step of detecting in a biological sample obtained from said subject polypeptide molecules comprising an amino acid sequence in a panel of at least two amino acid sequences, wherein at least one sequence in said panel is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in ATCC Deposit No:Z.

In any of these methods, the step of detecting said polypeptide molecules includes using an antibody.

Also preferred is an isolated nucleic acid molecule comprising a nucleotide sequence which is at least 95% identical to a nucleotide sequence encoding a polypeptide wherein said
5 polypeptide comprises an amino acid sequence that is at least 90% identical to a sequence of at least 10 contiguous amino acids in a sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in ATCC Deposit No:Z.

10 Also preferred is an isolated nucleic acid molecule, wherein said nucleotide sequence encoding a polypeptide has been optimized for expression of said polypeptide in a prokaryotic host.

Also preferred is a polypeptide molecule, wherein said polypeptide comprises an amino acid sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a
15 polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a polypeptide encoded by the cDNA contained in ATCC Deposit No:Z.

Further preferred is a method of making a recombinant vector comprising inserting any of the above isolated nucleic acid molecule into a vector. Also preferred is the recombinant vector
20 produced by this method. Also preferred is a method of making a recombinant host cell comprising introducing the vector into a host cell, as well as the recombinant host cell produced by this method.

Also preferred is a method of making an isolated polypeptide comprising culturing this recombinant host cell under conditions such that said polypeptide is expressed and recovering said
25 polypeptide. Also preferred is this method of making an isolated polypeptide, wherein said recombinant host cell is a eukaryotic cell and said polypeptide is a human protein comprising an amino acid sequence selected from the group consisting of: polypeptide sequence of SEQ ID NO:Y; a polypeptide encoded by SEQ ID NO:X or the complementary strand thereto; the polypeptide encoded by the nucleotide sequence as defined in columns 8 and 9 of Table 2; and a
30 polypeptide encoded by the cDNA contained in ATCC Deposit No:Z. The isolated polypeptide produced by this method is also preferred.

Also preferred is a method of treatment of an individual in need of an increased level of a protein activity, which method comprises administering to such an individual a Therapeutic
35 comprising an amount of an isolated polypeptide, polynucleotide, immunogenic fragment or analogue thereof, binding agent, antibody, or antigen binding fragment of the claimed invention effective to increase the level of said protein activity in said individual.

Also preferred is a method of treatment of an individual in need of a decreased level of a protein activity, which method comprised administering to such an individual a Therapeutic comprising an amount of an isolated polypeptide, polynucleotide, immunogenic fragment or analogue thereof, binding agent, antibody, or antigen binding fragment of the claimed invention effective to decrease the level of said protein activity in said individual.

Also preferred is a method of treatment of an individual in need of a specific delivery of toxic compositions to diseased cells (e.g., tumors, leukemias or lymphomas), which method comprises administering to such an individual a Therapeutic comprising an amount of an isolated polypeptide of the invention, including, but not limited to a binding agent, or antibody of the claimed invention that are associated with toxin or cytotoxic prodrugs.

Having generally described the invention, the same will be more readily understood by reference to the following examples, which are provided by way of illustration and are not intended as limiting.

Description of Table 6

Table 6 summarizes some of the ATCC Deposits, Deposit dates, and ATCC designation numbers of deposits made with the ATCC in connection with the present application. These deposits were made in addition to those described in the Table 1A.

Table 6

ATCC Deposits	Deposit Date	ATCC Designation Number
LP01, LP02, LP03, LP04, LP05, LP06, LP07, LP08, LP09, LP10, LP11,	May-20-97	209059, 209060, 209061, 209062, 209063, 209064, 209065, 209066, 209067, 209068, 209069
LP12	Jan-12-98	209579
LP13	Jan-12-98	209578
LP14	Jul-16-98	203067
LP15	Jul-16-98	203068
LP16	Feb-1-99	203609
LP17	Feb-1-99	203610
LP20	Nov-17-98	203485
LP21	Jun-18-99	PTA-252
LP22	Jun-18-99	PTA-253
LP23	Dec-22-99	PTA-1081

Examples

Example 1: Isolation of a Selected cDNA Clone From the Deposited Sample

5 Each ATCC Deposit No:Z is contained in a plasmid vector. Table 7 identifies the vectors used to construct the cDNA library from which each clone was isolated. In many cases, the vector used to construct the library is a phage vector from which a plasmid has been excised. The following correlates the related plasmid for each phage vector used in constructing the cDNA library. For example, where a particular clone is identified in Table 7 as being isolated in the
10 vector "Lambda Zap," the corresponding deposited clone is in "pBluescript."

	<u>Vector Used to Construct Library</u>	<u>Corresponding Deposited Plasmid</u>
	Lambda Zap	pBluescript (pBS)
	Uni-Zap XR	pBluescript (pBS)
	Zap Express	pBK
15	lafmid BA	plafmid BA
	pSport1	pSport1
	pCMVSPORT 2.0	pCMVSPORT 2.0
	pCMVSPORT 3.0	pCMVSPORT 3.0
	pCR [®] 2.1	pCR [®] 2.1
20	Vectors Lambda Zap (U.S. Patent Nos. 5,128,256 and 5,286,636), Uni-Zap XR (U.S. Patent Nos. 5,128, 256 and 5,286,636), Zap Express (U.S. Patent Nos. 5,128,256 and 5,286,636), pBluescript (pBS) (Short, J. M. et al., Nucleic Acids Res. 16:7583-7600 (1988); Alting-Mees, M. A. and Short, J. M., Nucleic Acids Res. 17:9494 (1989)) and pBK (Alting-Mees, M. A. et al., Strategies 5:58-61 (1992)) are commercially available from Stratagene Cloning Systems, Inc., 25 11011 N. Torrey Pines Road, La Jolla, CA, 92037. pBS contains an ampicillin resistance gene and pBK contains a neomycin resistance gene. Both can be transformed into E. coli strain XL-1 Blue, also available from Stratagene. pBS comes in 4 forms SK+, SK-, KS+ and KS-. The S and K refers to the orientation of the polylinker to the T7 and T3 primer sequences which flank the polylinker region ("S" is for SacI and "K" is for KpnI which are the first sites on each respective 30 end of the linker). "+" or "-" refer to the orientation of the fl origin of replication ("ori"), such that in one orientation, single stranded rescue initiated from the fl ori generates sense strand DNA and in the other, antisense.	

Vectors pSport1, pCMVSPORT 2.0 and pCMVSPORT 3.0, were obtained from Life Technologies, Inc., P. O. Box 6009, Gaithersburg, MD 20897. All Sport vectors contain an
35 ampicillin resistance gene and may be transformed into E. coli strain DH10B, also available from Life Technologies. (See, for instance, Gruber, C. E., et al., Focus 15:59 (1993)). Vector lafmid BA (Bento Soares, Columbia University, NY) contains an ampicillin resistance gene and can be

transformed into *E. coli* strain XL-1 Blue. Vector pCR[®]2.1, which is available from Invitrogen, 1600 Faraday Avenue, Carlsbad, CA 92008, contains an ampicillin resistance gene and may be transformed into *E. coli* strain DH10B, available from Life Technologies. (See, for instance, Clark, J. M., Nuc. Acids Res. 16:9677-9686 (1988) and Mead, D. et al., Bio/Technology 9: (1991)). Preferably, a polynucleotide of the present invention does not comprise the phage vector sequences identified for the particular clone in Table 7, as well as the corresponding plasmid vector sequences designated above.

The deposited material in the sample assigned the ATCC Deposit Number cited by reference to Table 1A, Table 2, Table 6 and Table 7 for any given cDNA clone also may contain one or more additional plasmids, each comprising a cDNA clone different from that given clone. Thus, deposits sharing the same ATCC Deposit Number contain at least a plasmid for each ATCC Deposit No:Z.

TABLE 7

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HUKA HUKB HUKC HUKD HUKF HUKG	Human Uterine Cancer	Lambda ZAP II	LP01
HCNA HCNB	Human Colon	Lambda Zap II	LP01
HFFA	Human Fetal Brain, random primed	Lambda Zap II	LP01
HTWA	Resting T-Cell	Lambda ZAP II	LP01
HBQA	Early Stage Human Brain, random primed	Lambda ZAP II	LP01
HLMB HLMF HLMG HLMH HLMJ HLMK HLMM HLMN	breast lymph node CDNA library	Lambda ZAP II	LP01
HCQA HCQB	human colon cancer	Lambda ZAP II	LP01
HMEA HMEC HMED HMEE HMEF HMEG HMEI HMEJ HMEK HMEK	Human Microvascular Endothelial Cells, fract. A	Lambda ZAP II	LP01
HUSA HUSC	Human Umbilical Vein Endothelial Cells, fract. A	Lambda ZAP II	LP01
HLQA HLQB	Hepatocellular Tumor	Lambda ZAP II	LP01
HHGA HHGB HHGC HHGD	Hemangiopericytoma	Lambda ZAP II	LP01
HSDM	Human Striatum Depression, re-rescue	Lambda ZAP II	LP01
HUSH	H Umbilical Vein Endothelial Cells, frac A, re-excision	Lambda ZAP II	LP01
HSGS	Salivary gland, subtracted	Lambda ZAP II	LP01
HFXA HFXB HFXC HFXD HFXE HFXF HFXG HFXH	Brain frontal cortex	Lambda ZAP II	LP01
HPQA HPQB HPQC	PERM TF274	Lambda ZAP II	LP01
HFXJ HFXK	Brain Frontal Cortex, re-excision	Lambda ZAP II	LP01
HCWA HCWB HCWC HCWD HCWE HCWF HCWG HCWH HCWI HCWJ HCWK	CD34 positive cells (Cord Blood)	ZAP Express	LP02
HCUA HCUB HCUC	CD34 depleted Buffy Coat	ZAP Express	LP02

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
	(Cord Blood)		
HRSM	A-14 cell line	ZAP Express	LP02
HRSA	A1-CELL LINE	ZAP Express	LP02
HCUD HCUE HCUF HCUG HCUH HCUI	CD34 depleted Buffy Coat (Cord Blood), re-excision	ZAP Express	LP02
HBXE HBXF HBXG	H. Whole Brain #2, re-excision	ZAP Express	LP02
HRLM	L8 cell line	ZAP Express	LP02
HBXA HBXB HBXC HBXD	Human Whole Brain #2 - Oligo dT > 1.5Kb	ZAP Express	LP02
HUDA HUDB HUDC	Testes	ZAP Express	LP02
HHTM HHTN HHTO	H. hypothalamus, frac A;re- excision	ZAP Express	LP02
HHTL	H. hypothalamus, frac A	ZAP Express	LP02
HASA HASD	Human Adult Spleen	Uni-ZAP XR	LP03
HFKC HFKD HFKE HFKF HFKG	Human Fetal Kidney	Uni-ZAP XR	LP03
HE8A HE8B HE8C HE8D HE8E HE8F HE8M HE8N	Human 8 Week Whole Embryo	Uni-ZAP XR	LP03
HGBA HGBD HGBE HGBF HGBG HGBH HGBI	Human Gall Bladder	Uni-ZAP XR	LP03
HLHA HLHB HLHC HLHD HLHE HLHF HLHG HLHH HLHQ	Human Fetal Lung III	Uni-ZAP XR	LP03
HPMA HPMB HPMC HPMD HPME HPMF HPMG HPMH	Human Placenta	Uni-ZAP XR	LP03
HPRA HPRB HPRC HPRD	Human Prostate	Uni-ZAP XR	LP03
HSIA HSIC HSID HSIE	Human Adult Small Intestine	Uni-ZAP XR	LP03
HTEA HTEB HTEC HTED HTEE HTEF HTEG HTEH HTEI HTEJ HTEK	Human Testes	Uni-ZAP XR	LP03
HTPA HTPB HTPC HTPD HTPE	Human Pancreas Tumor	Uni-ZAP XR	LP03
HTTA HTTB HTTC HTTD HTTE HTTF	Human Testes Tumor	Uni-ZAP XR	LP03
HAPA HAPB HAPC HAPM	Human Adult Pulmonary	Uni-ZAP XR	LP03
HETA HETB HETC HETD HETE HETF HETG HETH HETI	Human Endometrial Tumor	Uni-ZAP XR	LP03
HHFB HHFC HHFD HHFE HHFF HHFG HHFH HHFI	Human Fetal Heart	Uni-ZAP XR	LP03
HHPB HHPD HHPD HHPD HHPF HHPG HHPH	Human Hippocampus	Uni-ZAP XR	LP03
HCE1 HCE2 HCE3 HCE4 HCE5 HCEB HCEC HCEC HCEE HCEF HCEG	Human Cerebellum	Uni-ZAP XR	LP03
HUVB HUVB HUVB HUVB	Human Umbilical Vein, Endo. remake	Uni-ZAP XR	LP03
HSTA HSTB HSTC HSTD	Human Skin Tumor	Uni-ZAP XR	LP03
HTAA HTAB HTAC HTAD HTAE	Human Activated T-Cells	Uni-ZAP XR	LP03

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HFEA HFEB HFEC	Human Fetal Epithelium (Skin)	Uni-ZAP XR	LP03
HJPA HJPB HJPC HJPD	HUMAN JURKAT MEMBRANE BOUND POLYSOMES	Uni-ZAP XR	LP03
HESA	Human epithelioid sarcoma	Uni-Zap XR	LP03
HLTA HLTB HLTC HLTD HLTE HLTF	Human T-Cell Lymphoma	Uni-ZAP XR	LP03
HFTA HFTB HFTC HFTD	Human Fetal Dura Mater	Uni-ZAP XR	LP03
HRDA HRDB HRDC HRDD HRDE HRDF	Human Rhabdomyosarcoma	Uni-ZAP XR	LP03
HCAA HCAB HCAC	Cem cells cyclohexamide treated	Uni-ZAP XR	LP03
HRGA HRGB HRGC HRGD	Raji Cells, cyclohexamide treated	Uni-ZAP XR	LP03
HSUA HSUB HSUC HSUM	Supt Cells, cyclohexamide treated	Uni-ZAP XR	LP03
HT4A HT4C HT4D	Activated T-Cells, 12 hrs.	Uni-ZAP XR	LP03
HE9A HE9B HE9C HE9D HE9E HE9F HE9G HE9H HE9M HE9N	Nine Week Old Early Stage Human	Uni-ZAP XR	LP03
HATA HATB HATC HATD HATE	Human Adrenal Gland Tumor	Uni-ZAP XR	LP03
HT5A	Activated T-Cells, 24 hrs.	Uni-ZAP XR	LP03
HFGA HFGM	Human Fetal Brain	Uni-ZAP XR	LP03
HNEA HNEB HNEC HNED HNEE	Human Neutrophil	Uni-ZAP XR	LP03
HBGB HBGD	Human Primary Breast Cancer	Uni-ZAP XR	LP03
HBNA HBNB	Human Normal Breast	Uni-ZAP XR	LP03
HCAS	Cem Cells, cyclohexamide treated, subtra	Uni-ZAP XR	LP03
HHPS	Human Hippocampus, subtracted	pBS	LP03
HKCS HKCU	Human Colon Cancer, subtracted	pBS	LP03
HRGS	Raji cells, cyclohexamide treated, subtracted	pBS	LP03
HSUT	Supt cells, cyclohexamide treated, differentially expressed	pBS	LP03
HT4S	Activated T-Cells, 12 hrs, subtracted	Uni-ZAP XR	LP03
HCDA HCDB HCDC HCDD HCDE	Human Chondrosarcoma	Uni-ZAP XR	LP03
HOAA HOAB HOAC	Human Osteosarcoma	Uni-ZAP XR	LP03
HTLA HTLB HTLC HTLD HTLE HTLF	Human adult testis, large inserts	Uni-ZAP XR	LP03
HLMA HLMD HLMD	Breast Lymph node cDNA library	Uni-ZAP XR	LP03
H6EA H6EB H6EC	HL-60, PMA 4H	Uni-ZAP XR	LP03
HTXA HTXB HTXC HTXD HTXE HTXF HTXG HTXH	Activated T-Cell (12hs)/Thiouridine labelledEco	Uni-ZAP XR	LP03
HNFA HNFB HNFC HNFD	Human Neutrophil, Activated	Uni-ZAP XR	LP03

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HNFE HNFF HNFG HNFH HNFI			
HTOB HTOC	HUMAN TONSILS, FRACTION 2	Uni-ZAP XR	LP03
HMGB	Human OB MG63 control fraction I	Uni-ZAP XR	LP03
HOPB	Human OB HOS control fraction I	Uni-ZAP XR	LP03
HORB	Human OB HOS treated (10 nM E2) fraction I	Uni-ZAP XR	LP03
HSVA HSVB HSVC	Human Chronic Synovitis	Uni-ZAP XR	LP03
HROA	HUMAN STOMACH	Uni-ZAP XR	LP03
HBJA HBJB HBJC HBJD HBJE HBJF HBJG HBJH HBJI HBJJ HBJK	HUMAN B CELL LYMPHOMA	Uni-ZAP XR	LP03
HCRA HCRB HCRC	human corpus colosum	Uni-ZAP XR	LP03
HODA HODB HODC HODD	human ovarian cancer	Uni-ZAP XR	LP03
HDSA	Dermatofibrosarcoma Protuberance	Uni-ZAP XR	LP03
HMWA HMWB HMWC HMWD HMWE HMWF HMWG HMWH HMWI HMWJ	Bone Marrow Cell Line (RS4;11)	Uni-ZAP XR	LP03
HSOA	stomach cancer (human)	Uni-ZAP XR	LP03
HERA	SKIN	Uni-ZAP XR	LP03
HMDA	Brain-medulloblastoma	Uni-ZAP XR	LP03
HGLA HGLB HGLD	Glioblastoma	Uni-ZAP XR	LP03
HEAA	H. Atrophic Endometrium	Uni-ZAP XR	LP03
HBCA HBCB	H. Lymph node breast Cancer	Uni-ZAP XR	LP03
HPWT	Human Prostate BPH, re- excision	Uni-ZAP XR	LP03
HFVG HFVH HFVI	Fetal Liver, subtraction II	pBS	LP03
HNFI	Human Neutrophils, Activated, re-excision	pBS	LP03
HBMB HBMC HBMD	Human Bone Marrow, re- excision	pBS	LP03
HKML HKMM HKMN	H. Kidney Medulla, re-excision	pBS	LP03
HKIX HKIY	H. Kidney Cortex, subtracted	pBS	LP03
HADT	H. Amygdala Depression, subtracted	pBS	LP03
H6AS	HL-60, untreated, subtracted	Uni-ZAP XR	LP03
H6ES	HL-60, PMA 4H, subtracted	Uni-ZAP XR	LP03
H6BS	HL-60, RA 4h, Subtracted	Uni-ZAP XR	LP03
H6CS	HL-60, PMA 1d, subtracted	Uni-ZAP XR	LP03
HTXJ HTXK	Activated T- cell(12h)/Thiouridine-re- excision	Uni-ZAP XR	LP03
HMSA HMSB HMSC HMSD HMSE HMSF HMSG HMSH HMSI HMSJ HMSK	Monocyte activated	Uni-ZAP XR	LP03
HAGA HAGB HAGC HAGD	Human Amygdala	Uni-ZAP XR	LP03

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HAGE HAGF			
HSRA HSRB HSRE	STROMAL - OSTEOCLASTOMA	Uni-ZAP XR	LP03
HSRD HSRF HSRG HSRH	Human Osteoclastoma Stromal Cells - unamplified	Uni-ZAP XR	LP03
HSQA HSQB HSQC HSQD HSQE HSQF HSQG	Stromal cell TF274	Uni-ZAP XR	LP03
HSKA HSKB HSKC HSKD HSKE HSKF HSKZ	Smooth muscle, serum treated	Uni-ZAP XR	LP03
HSLA HSLB HSLC HSLD HSLE HSLF HSLG	Smooth muscle, control	Uni-ZAP XR	LP03
HSDA HSDD HSDE HSDF HSDG HSDH	Spinal cord	Uni-ZAP XR	LP03
HPWS	Prostate-BPH subtracted II	pBS	LP03
HSKW HSKX HSKY	Smooth Muscle- HASTE normalized	pBS	LP03
HFPB HFPC HFPD	H. Frontal cortex, epileptic; re-excision	Uni-ZAP XR	LP03
HSDI HSDJ HSDK	Spinal Cord, re-excision	Uni-ZAP XR	LP03
HSKN HSKO	Smooth Muscle Serum Treated, Norm	pBS	LP03
HSKG HSKH HSKI	Smooth muscle, serum induced, re-exc	pBS	LP03
HFCA HFCE HFCD HFCE HFCE	Human Fetal Brain	Uni-ZAP XR	LP04
HPTA HPTB HPTD	Human Pituitary	Uni-ZAP XR	LP04
HTHB HTHC HTHD	Human Thymus	Uni-ZAP XR	LP04
HE6B HE6C HE6D HE6E HE6F HE6G HE6S	Human Whole Six Week Old Embryo	Uni-ZAP XR	LP04
HSSA HSSB HSSC HSSD HSSE HSSF HSSG HSSH HSSI HSSJ HSSK	Human Synovial Sarcoma	Uni-ZAP XR	LP04
HE7T	7 Week Old Early Stage Human, subtracted	Uni-ZAP XR	LP04
HEPA HEPB HEPD	Human Epididymus	Uni-ZAP XR	LP04
HSNA HSNB HSNC HSNM HSNN	Human Synovium	Uni-ZAP XR	LP04
HPFB HPFC HPFD HPFE	Human Prostate Cancer, Stage C fraction	Uni-ZAP XR	LP04
HE2A HE2D HE2E HE2H HE2I HE2M HE2N HE2O	12 Week Old Early Stage Human	Uni-ZAP XR	LP04
HE2B HE2C HE2F HE2G HE2P HE2Q	12 Week Old Early Stage Human, II	Uni-ZAP XR	LP04
HPTS HPTT HPTU	Human Pituitary, subtracted	Uni-ZAP XR	LP04
HAUA HAUB HAUC	Amniotic Cells - TNF induced	Uni-ZAP XR	LP04
HAQA HAQB HAQC HAQD	Amniotic Cells - Primary Culture	Uni-ZAP XR	LP04
HWTA HWTB HWTC	wilm's tumor	Uni-ZAP XR	LP04
HBSD	Bone Cancer, re-excision	Uni-ZAP XR	LP04
HSGB	Salivary gland, re-excision	Uni-ZAP XR	LP04

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HSJA HSJB HSJC	Smooth muscle-ILb induced	Uni-ZAP XR	LP04
HSXA HSXB HSXC HSXD	Human Substantia Nigra	Uni-ZAP XR	LP04
HSJA HSJB HSJC	Smooth muscle, IL1b induced	Uni-ZAP XR	LP04
HOUA HOUB HOUC HOUD HOUE	Adipocytes	Uni-ZAP XR	LP04
HPWA HPWB HPWC HPWD HPWE	Prostate BPH	Uni-ZAP XR	LP04
HELA HELB HELC HELD HELE HELF HELG HELH	Endothelial cells-control	Uni-ZAP XR	LP04
HEMA HEMB HEMC HEMD HEME HEMF HEMG HEMH	Endothelial-induced	Uni-ZAP XR	LP04
HBIA HBIB HBIC	Human Brain, Striatum	Uni-ZAP XR	LP04
HHSA HHSB HHSC HHSD HHSE	Human Hypothalamus,Schizophrenia	Uni-ZAP XR	LP04
HNGA HNGB HNGC HNGD HNGE HNGF HNGG HNGH HNGI HNGJ	neutrophils control	Uni-ZAP XR	LP04
HNHA HNHB HNHC HNHD HNHE HNHF HNHG HNHH HNHI HNHI	Neutrophils IL-1 and LPS induced	Uni-ZAP XR	LP04
HSDB HSDC	STRIATUM DEPRESSION	Uni-ZAP XR	LP04
HHPT	Hypothalamus	Uni-ZAP XR	LP04
HSAT HSAU HSAV HSAW HSAX HSAY HSAZ	Anergic T-cell	Uni-ZAP XR	LP04
HBMS HBMT HBMU HBMV HBMW HBMX	Bone marrow	Uni-ZAP XR	LP04
HOEA HOEB HOEC HOED HOEE HOEF HOEJ	Osteoblasts	Uni-ZAP XR	LP04
HAIA HAIB HAIC HAID HAIE HAIF	Epithelial-TNFa and INF induced	Uni-ZAP XR	LP04
HTGA HTGB HTGC HTGD	Apoptotic T-cell	Uni-ZAP XR	LP04
HMCA HMCB HMCC HMCD HMCE	Macrophage-oxLDL	Uni-ZAP XR	LP04
HMAA HMAB HMAC HMAE HMAF HMAG	Macrophage (GM-CSF treated)	Uni-ZAP XR	LP04
HPHA	Normal Prostate	Uni-ZAP XR	LP04
HPIA HPIB HPIC	LNCAP prostate cell line	Uni-ZAP XR	LP04
HPJA HPJB HPJC	PC3 Prostate cell line	Uni-ZAP XR	LP04
HOSE HOSF HOSG	Human Osteoclastoma, re-excision	Uni-ZAP XR	LP04
HTGE HTGF	Apoptotic T-cell, re-excision	Uni-ZAP XR	LP04
HMAJ HMAK	H Macrophage (GM-CSF treated), re-excision	Uni-ZAP XR	LP04
HACB HACC HACD	Human Adipose Tissue, re-excision	Uni-ZAP XR	LP04
HFPA	H. Frontal Cortex, Epileptic	Uni-ZAP XR	LP04
HFAA HFAB HFAC HFAD HFAE	Alzheimer's, spongy change	Uni-ZAP XR	LP04
HFAM	Frontal Lobe, Dementia	Uni-ZAP XR	LP04
HMIA HMIB HMIC	Human Manic Depression	Uni-ZAP XR	LP04

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
	Tissue		
HTSA HTSE HTSF HTSG HTSH	Human Thymus	pBS	LP05
HPBA HPBB HPBC HPBD HPBE	Human Pineal Gland	pBS	LP05
HSAA HSAB HSAC	HSA 172 Cells	pBS	LP05
HSBA HSBB HSBC HSBM	HSC172 cells	pBS	LP05
HJAA HJAB HJAC HJAD	Jurkat T-cell G1 phase	pBS	LP05
HJBA HJBB HJBC HJBD	Jurkat T-Cell, S phase	pBS	LP05
HAFA HAFB	Aorta endothelial cells + TNF-a	pBS	LP05
HAWA HAWB HAWC	Human White Adipose	pBS	LP05
HTNA HTNB	Human Thyroid	pBS	LP05
HONA	Normal Ovary, Premenopausal	pBS	LP05
HARA HARB	Human Adult Retina	pBS	LP05
HLJA HLJB	Human Lung	pCMVSPORT 1	LP06
HOFM HOFN HOFO	H. Ovarian Tumor, II, OV5232	pCMVSPORT 2.0	LP07
HOGA HOGB HOGC	OV 10-3-95	pCMVSPORT 2.0	LP07
HCGL	CD34+cells, II	pCMVSPORT 2.0	LP07
HDLA	Hodgkin's Lymphoma I	pCMVSPORT 2.0	LP07
HDTA HDTB HDTC HDTD HDTE	Hodgkin's Lymphoma II	pCMVSPORT 2.0	LP07
HKAA HKAB HKAC HKAD HKAH HKAF HKAG HKAH	Keratinocyte	pCMVSPORT2.0	LP07
HCIM	CAPFINDER, Crohn's Disease, lib 2	pCMVSPORT 2.0	LP07
HKAL	Keratinocyte, lib 2	pCMVSPORT2.0	LP07
HKAT	Keratinocyte, lib 3	pCMVSPORT2.0	LP07
HNDA	Nasal polyps	pCMVSPORT2.0	LP07
HDRA	H. Primary Dendritic Cells, lib 3	pCMVSPORT2.0	LP07
HOHA HOHB HOHC	Human Osteoblasts II	pCMVSPORT2.0	LP07
HLDA HLDB HLDC	Liver, Hepatoma	pCMVSPORT3.0	LP08
HLDN HLDO HLDP	Human Liver, normal	pCMVSPORT3.0	LP08
HMTA	pBMC stimulated w/ poly I/C	pCMVSPORT3.0	LP08
HNTA	NTERA2, control	pCMVSPORT3.0	LP08
HDBA HDBB HDBC HDBD HDBE HDBF HDBG HDBH HDBI HDBJ HDBK	Primary Dendritic Cells, lib 1	pCMVSPORT3.0	LP08
HDBM HDBN HDBO HDBP	Primary Dendritic cells, frac 2	pCMVSPORT3.0	LP08
HMUA HMUB HMUC	Myeloid Progenitor Cell Line	pCMVSPORT3.0	LP08
HHEA HHEB HHEC HHEH	T Cell helper I	pCMVSPORT3.0	LP08
HHEM HHEN HHEO HHEP	T cell helper II	pCMVSPORT3.0	LP08
HEQA HEQB HEQC	Human endometrial stromal cells	pCMVSPORT3.0	LP08
HJMA HJMB	Human endometrial stromal cells-treated with progesterone	pCMVSPORT3.0	LP08
HSWA HSWB HSWC	Human endometrial stromal cells-treated with estradiol	pCMVSPORT3.0	LP08
HSYA HSYB HSYC	Human Thymus Stromal Cells	pCMVSPORT3.0	LP08
HLWA HLWB HLWC	Human Placenta	pCMVSPORT3.0	LP08
HRAA HRAB HRAC	Rejected Kidney, lib 4	pCMVSPORT3.0	LP08

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HMTM	PCR, pBMC I/C treated	PCRII	LP09
HMJA	H. Meningima, M6	pSport 1	LP10
HMKA HMKB HMKC HMKD HMKE	H. Meningima, M1	pSport 1	LP10
HUSG HUSI	Human umbilical vein endothelial cells, IL-4 induced	pSport 1	LP10
HUSX HUSY	Human Umbilical Vein Endothelial Cells, uninduced	pSport 1	LP10
HOFA	Ovarian Tumor I, OV5232	pSport 1	LP10
HCFA HCFB HCFC HCFD	T-Cell PHA 16 hrs	pSport 1	LP10
HCFL HCFM HCFN HCFO	T-Cell PHA 24 hrs	pSport 1	LP10
HADA HADC HADD HADE HADF HADG	Human Adipose	pSport 1	LP10
HOVA HOVB HOVC	Human Ovary	pSport 1	LP10
HTWB HTWC HTWD HTWE HTWF	Resting T-Cell Library, II	pSport 1	LP10
HMMA	Spleen metastatic melanoma	pSport 1	LP10
HLYA HLYB HLYC HLYD HLYE	Spleen, Chronic lymphocytic leukemia	pSport 1	LP10
HCGA	CD34+ cell, I	pSport 1	LP10
HEOM HEON	Human Eosinophils	pSport 1	LP10
HTDA	Human Tonsil, Lib 3	pSport 1	LP10
HSPA	Salivary Gland, Lib 2	pSport 1	LP10
HCHA HCHB HCHC	Breast Cancer cell line, MDA 36	pSport 1	LP10
HCHM HCHN	Breast Cancer Cell line, angiogenic	pSport 1	LP10
HCIA	Crohn's Disease	pSport 1	LP10
HDAA HDAB HDAC	HEL cell line	pSport 1	LP10
HABA	Human Astrocyte	pSport 1	LP10
HUFA HUFB HUFC	Ulcerative Colitis	pSport 1	LP10
HNTM	NTERA2 + retinoic acid, 14 days	pSport 1	LP10
HDQA	Primary Dendritic cells, CapFinder2, frac 1	pSport 1	LP10
HDQM	Primary Dendritic Cells, CapFinder, frac 2	pSport 1	LP10
HLDX	Human Liver, normal, CapFinder	pSport 1	LP10
HULA HULB HULC	Human Dermal Endothelial Cells, untreated	pSport1	LP10
HUMA	Human Dermal Endothelial cells, treated	pSport1	LP10
HCJA	Human Stromal Endometrial fibroblasts, untreated	pSport1	LP10
HCJM	Human Stromal endometrial fibroblasts, treated w/ estradiol	pSport1	LP10
HEDA	Human Stromal endometrial fibroblasts, treated with progesterone	pSport1	LP10
HFNA	Human ovary tumor cell OV350721	pSport1	LP10

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HKGA HKGB HKGC HKGD	Merkel Cells	pSport1	LP10
HISA HISB HISC	Pancreas Islet Cell Tumor	pSport1	LP10
HLSA	Skin, burned	pSport1	LP10
HBZA	Prostate,BPH, Lib 2	pSport 1	LP10
HBZS	Prostate BPH,Lib 2, subtracted	pSport 1	LP10
HFIA HFIB HFIC	Synovial Fibroblasts (control)	pSport 1	LP10
HFIH HFII HFII	Synovial hypoxia	pSport 1	LP10
HFIT HFIU HFIV	Synovial IL-1/TNF stimulated	pSport 1	LP10
HGCA	Mesangial cell, frac 1	pSport1	LP10
HMVA HMVB HMVC	Bone Marrow Stromal Cell, untreated	pSport1	LP10
HFIX HFYI HFIZ	Synovial Fibroblasts (II1/TNF), subt	pSport1	LP10
HFOX HFOY HFOZ	Synovial hypoxia-RSF subtracted	pSport1	LP10
HMQA HMQB HMQC HMQD	Human Activated Monocytes	Uni-ZAP XR	LP11
HLIA HLIB HLIC	Human Liver	pCMVSport 1	LP012
HHBA HHBB HHBC HHBD HHBE	Human Heart	pCMVSport 1	LP012
HBBA HBBB	Human Brain	pCMVSport 1	LP012
HLJA HLJB HLJC HLJD HLJE	Human Lung	pCMVSport 1	LP012
HOGA HOGB HOGC	Ovarian Tumor	pCMVSport 2.0	LP012
HTJM	Human Tonsils, Lib 2	pCMVSport 2.0	LP012
HAMF HAMG	KMH2	pCMVSport 3.0	LP012
HAJA HAJB HAJC	L428	pCMVSport 3.0	LP012
HWBA HWBB HWBC HWBD HWBE	Dendritic cells, pooled	pCMVSport 3.0	LP012
HWAA HWAB HWAC HWAD HWAE	Human Bone Marrow, treated	pCMVSport 3.0	LP012
HYAA HYAB HYAC	B Cell lymphoma	pCMVSport 3.0	LP012
HWHG HWHH HWHI	Healing groin wound, 6.5 hours post incision	pCMVSport 3.0	LP012
HWHP HWHQ HWHR	Healing groin wound; 7.5 hours post incision	pCMVSport 3.0	LP012
HARM	Healing groin wound - zero hr post-incision (control)	pCMVSport 3.0	LP012
HBIM	Olfactory epithelium; nasalcavity	pCMVSport 3.0	LP012
HWDA	Healing Abdomen wound; 70&90 min post incision	pCMVSport 3.0	LP012
HWEA	Healing Abdomen Wound;15 days post incision	pCMVSport 3.0	LP012
HWJA	Healing Abdomen Wound;21&29 days	pCMVSport 3.0	LP012
HNAL	Human Tongue, frac 2	pSport1	LP012
HMJA	H. Meningioma, M6	pSport1	LP012
HMKA HMKB HMKC HMKD HMKE	H. Meningioma, M1	pSport1	LP012
HOFA	Ovarian Tumor I, OV5232	pSport1	LP012
HCFA HCFB HCFC HCFD	T-Cell PHA 16 hrs	pSport1	LP012

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HCFL HCFM HCFN HCFO	T-Cell PHA 24 hrs	pSport1	LP012
HMMA HMMB HMMC	Spleen metastatic melanoma	pSport1	LP012
HTDA	Human Tonsil, Lib 3	pSport1	LP012
HDBA	Human Fetal Thymus	pSport1	LP012
HDUA	Pericardium	pSport1	LP012
HBZA	Prostate, BPH, Lib 2	pSport1	LP012
HWCA	Larynx tumor	pSport1	LP012
HWKA	Normal lung	pSport1	LP012
HSMB	Bone marrow stroma, treated	pSport1	LP012
HBHM	Normal trachea	pSport1	LP012
HLFC	Human Larynx	pSport1	LP012
HLRB	Siebben Polyposis	pSport1	LP012
HNIA	Mammary Gland	pSport1	LP012
HNJB	Palate carcinoma	pSport1	LP012
HNKA	Palate normal	pSport1	LP012
HMZA	Pharynx carcinoma	pSport1	LP012
HABG	Cheek Carcinoma	pSport1	LP012
HMZM	Pharynx Carcinoma	pSport1	LP012
HDRM	Larynx Carcinoma	pSport1	LP012
HVAA	Pancreas normal PCA4 No	pSport1	LP012
HICA	Tongue carcinoma	pSport1	LP012
HUKA HUKB HUKC HUKD HUKF	Human Uterine Cancer	Lambda ZAP II	LP013
HFFA	Human Fetal Brain, random primed	Lambda ZAP II	LP013
HTUA	Activated T-cell labeled with 4-thioluri	Lambda ZAP II	LP013
HBQA	Early Stage Human Brain, random primed	Lambda ZAP II	LP013
HMEB	Human microvascular Endothelial cells, fract. B	Lambda ZAP II	LP013
HUSH	Human Umbilical Vein Endothelial cells, fract. A, re-excision	Lambda ZAP II	LP013
HLQC HLQD	Hepatocellular tumor, re-excision	Lambda ZAP II	LP013
HTWJ HTWK HTWL	Resting T-cell, re-excision	Lambda ZAP II	LP013
HF6S	Human Whole 6 week Old Embryo (II), subt	pBluescript	LP013
HHPS	Human Hippocampus, subtracted	pBluescript	LP013
HL1S	LNCAP, differential expression	pBluescript	LP013
HLHS HLHT	Early Stage Human Lung, Subtracted	pBluescript	LP013
HSUS	Supt cells, cyclohexamide treated, subtracted	pBluescript	LP013
HSUT	Supt cells, cyclohexamide treated, differentially expressed	pBluescript	LP013
HSDS	H. Striatum Depression, subtracted	pBluescript	LP013

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HPTZ	Human Pituitary, Subtracted VII	pBluescript	LP013
HSDX	H. Striatum Depression, subt II	pBluescript	LP013
HSDZ	H. Striatum Depression, subt	pBluescript	LP013
HPBA HPBB HPBC HPBD HPBE	Human Pineal Gland	pBluescript SK-	LP013
HRTA	Colorectal Tumor	pBluescript SK-	LP013
HSBA HSBB HSBC HSBM	HSC172 cells	pBluescript SK-	LP013
HJAA HJAB HJAC HJAD	Jurkat T-cell G1 phase	pBluescript SK-	LP013
HJBA HJBB HJBC HJBD	Jurkat T-cell, S1 phase	pBluescript SK-	LP013
HTNA HTNB	Human Thyroid	pBluescript SK-	LP013
HAHA HAHB	Human Adult Heart	Uni-ZAP XR	LP013
HE6A	Whole 6 week Old Embryo	Uni-ZAP XR	LP013
HFC A HFCB HFCC HFCD HFCE	Human Fetal Brain	Uni-ZAP XR	LP013
HFKC HFKD HFKE HFKF HFKG	Human Fetal Kidney	Uni-ZAP XR	LP013
HGBA HGBD HGBE HGBF HGBG	Human Gall Bladder	Uni-ZAP XR	LP013
HPRA HPRB HPRC HPRD	Human Prostate	Uni-ZAP XR	LP013
HTEA HTEB HTEC HTED HTEE	Human Testes	Uni-ZAP XR	LP013
HTTA HTTB HTTC HTTD HTTE	Human Testes Tumor	Uni-ZAP XR	LP013
HYBA HYBB	Human Fetal Bone	Uni-ZAP XR	LP013
HFLA	Human Fetal Liver	Uni-ZAP XR	LP013
HHFB HHFC HHFD HHFE HHFF	Human Fetal Heart	Uni-ZAP XR	LP013
HUVB HUV C HUVD HUVE	Human Umbilical Vein, End. remake	Uni-ZAP XR	LP013
HTHB HTHC HTHD	Human Thymus	Uni-ZAP XR	LP013
HSTA HSTB HSTC HSTD	Human Skin Tumor	Uni-ZAP XR	LP013
HTAA HTAB HTAC HTAD HTAE	Human Activated T-cells	Uni-ZAP XR	LP013
HFEA HFEB HFEC	Human Fetal Epithelium (skin)	Uni-ZAP XR	LP013
HJPA HJPB HJPC HJPD	Human Jurkat Membrane Bound Polysomes	Uni-ZAP XR	LP013
HESA	Human Epithelioid Sarcoma	Uni-ZAP XR	LP013
HALS	Human Adult Liver, Subtracted	Uni-ZAP XR	LP013
HFTA HFTB HFTC HFTD	Human Fetal Dura Mater	Uni-ZAP XR	LP013
HCAA HCAB HCAC	Cem cells, cyclohexamide treated	Uni-ZAP XR	LP013
HRGA HRGB HRGC HRGD	Raji Cells, cyclohexamide treated	Uni-ZAP XR	LP013
HE9A HE9B HE9C HE9D HE9E	Nine Week Old Early Stage Human	Uni-ZAP XR	LP013
HSFA	Human Fibrosarcoma	Uni-ZAP XR	LP013
HATA HATB HATC HATD HATE	Human Adrenal Gland Tumor	Uni-ZAP XR	LP013
HTRA	Human Trachea Tumor	Uni-ZAP XR	LP013
HE2A HE2D HE2E HE2H HE2I	12 Week Old Early Stage	Uni-ZAP XR	LP013

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
	Human		
HE2B HE2C HE2F HE2G HE2P	12 Week Old Early Stage Human, II	Uni-ZAP XR	LP013
HNEA HNEB HNEC HNED HNEE	Human Neutrophil	Uni-ZAP XR	LP013
HBGA	Human Primary Breast Cancer	Uni-ZAP XR	LP013
HPTS HPTT HPTU	Human Pituitary, subtracted	Uni-ZAP XR	LP013
HMQA HMQB HMQC HMQD	Human Activated Monocytes	Uni-ZAP XR	LP013
HOAA HOAB HOAC	Human Osteosarcoma	Uni-ZAP XR	LP013
HTOA HTOD HTOE HTOF HTOG	human tonsils	Uni-ZAP XR	LP013
HMGB	Human OB MG63 control fraction I	Uni-ZAP XR	LP013
HOPB	Human OB HOS control fraction I	Uni-ZAP XR	LP013
HOQB	Human OB HOS treated (1 nM E2) fraction I	Uni-ZAP XR	LP013
HAUA HAUB HAUC	Amniotic Cells - TNF induced	Uni-ZAP XR	LP013
HAQA HAQB HAQC HAQD	Amniotic Cells - Primary Culture	Uni-ZAP XR	LP013
HROA HROC	HUMAN STOMACH	Uni-ZAP XR	LP013
HBJA HBJB HBJC HBJD HBJE	HUMAN B CELL LYMPHOMA	Uni-ZAP XR	LP013
HODA HODB HODC HODD	human ovarian cancer	Uni-ZAP XR	LP013
HCPA	Corpus Callosum	Uni-ZAP XR	LP013
HSOA	stomach cancer (human)	Uni-ZAP XR	LP013
HERA	SKIN	Uni-ZAP XR	LP013
HMDA	Brain-medulloblastoma	Uni-ZAP XR	LP013
HGLA HGLB HGLD	Glioblastoma	Uni-ZAP XR	LP013
HWTB HWTB HWTB	wilm's tumor	Uni-ZAP XR	LP013
HEAA	H. Atrophic Endometrium	Uni-ZAP XR	LP013
HAPN HAPO HAPR HAPQ HAPR	Human Adult Pulmonary;re-excision	Uni-ZAP XR	LP013
HLTG HLTH	Human T-cell lymphoma;re-excision	Uni-ZAP XR	LP013
HAHC HAHD HAHE	Human Adult Heart;re-excision	Uni-ZAP XR	LP013
HAGA HAGB HAGC HAGD HAGE	Human Amygdala	Uni-ZAP XR	LP013
HSJA HSJB HSJC	Smooth muscle-ILb induced	Uni-ZAP XR	LP013
HSJA HSJB HSJC	Smooth muscle, IL1b induced	Uni-ZAP XR	LP013
HPWA HPWB HPWC HPWD HPWE	Prostate BPH	Uni-ZAP XR	LP013
HPIA HPIB HPIC	LNCAP prostate cell line	Uni-ZAP XR	LP013
HPJA HPJB HPJC	PC3 Prostate cell line	Uni-ZAP XR	LP013
HBTA	Bone Marrow Stroma, TNF&LPS ind	Uni-ZAP XR	LP013
HMCF HMCG HMCH HMCI HMCJ	Macrophage-oxLDL; re-excision	Uni-ZAP XR	LP013
HAGG HAGH HAGI	Human Amygdala;re-excision	Uni-ZAP XR	LP013
HACA	H. Adipose Tissue	Uni-ZAP XR	LP013

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HKFB	K562 + PMA (36 hrs),re-excision	ZAP Express	LP013
HCWT HCWU HCWV	CD34 positive cells (cord blood),re-ex	ZAP Express	LP013
HBWA	Whole brain	ZAP Express	LP013
HBXA HBXB HBXC HBXD	Human Whole Brain #2 - Oligo dT > 1.5Kb	ZAP Express	LP013
HAVM	Temporal cortex-Alzheimer	pT-Adv	LP014
HAVT	Hippocampus, Alzheimer Subtracted	pT-Adv	LP014
HHAS	CHME Cell Line	Uni-ZAP XR	LP014
HAJR	Larynx normal	pSport 1	LP014
HWLE HWLF HWLG HWLH	Colon Normal	pSport 1	LP014
HCRM HCRN HCRO	Colon Carcinoma	pSport 1	LP014
HWLI HWLJ HWLK	Colon Normal	pSport 1	LP014
HWLQ HWLR HWLS HWLT	Colon Tumor	pSport 1	LP014
HBFM	Gastrocnemius Muscle	pSport 1	LP014
HBOD HBOE	Quadriceps Muscle	pSport 1	LP014
HBKD HBKE	Soleus Muscle	pSport 1	LP014
HCCM	Pancreatic Langerhans	pSport 1	LP014
HWGA	Larynx carcinoma	pSport 1	LP014
HWGM HWGN	Larynx carcinoma	pSport 1	LP014
HWLA HWLB HWLC	Normal colon	pSport 1	LP014
HWLM HWLN	Colon Tumor	pSport 1	LP014
HVAM HVAN HVAO	Pancreas Tumor	pSport 1	LP014
HWGQ	Larynx carcinoma	pSport 1	LP014
HAQM HAQN	Salivary Gland	pSport 1	LP014
HASM	Stomach; normal	pSport 1	LP014
HBCM	Uterus; normal	pSport 1	LP014
HCDM	Testis; normal	pSport 1	LP014
HDJM	Brain; normal	pSport 1	LP014
HEFM	Adrenal Gland,normal	pSport 1	LP014
HBAA	Rectum normal	pSport 1	LP014
HFDm	Rectum tumour	pSport 1	LP014
HGAM	Colon, normal	pSport 1	LP014
HHMM	Colon, tumour	pSport 1	LP014
HCLB HCLC	Human Lung Cancer	Lambda Zap II	LP015
HRLA	L1 Cell line	ZAP Express	LP015
HHAM	Hypothalamus, Alzheimer's	pCMVSPORT 3.0	LP015
HKBA	Ku 812F Basophils Line	pSport 1	LP015
HS2S	Saos2, Dexamethosone Treated	pSport 1	LP016
HA5A	Lung Carcinoma A549 TNFalpha activated	pSport 1	LP016
HTFM	TF-1 Cell Line GM-CSF Treated	pSport 1	LP016
HYAS	Thyroid Tumour	pSport 1	LP016
HUTS	Larynx Normal	pSport 1	LP016
HXOA	Larynx Tumor	pSport 1	LP016
HEAH	Ea.hy.926 cell line	pSport 1	LP016
HINA	Adenocarcinoma Human	pSport 1	LP016
HRMA	Lung Mesothelium	pSport 1	LP016

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HLCL	Human Pre-Differentiated Adipocytes	Uni-Zap XR	LP017
HS2A	Saos2 Cells	pSport 1	LP020
HS2I	Saos2 Cells; Vitamin D3 Treated	pSport 1	LP020
HUCM	CHME Cell Line, untreated	pSport 1	LP020
HEPN	Aryepiglottis Normal	pSport 1	LP020
HPSN	Sinus Piniformis Tumour	pSport 1	LP020
HNSA	Stomach Normal	pSport 1	LP020
HNSM	Stomach Tumour	pSport 1	LP020
HNLA	Liver Normal Met5No	pSport 1	LP020
HUTA	Liver Tumour Met 5 Tu	pSport 1	LP020
HOCN	Colon Normal	pSport 1	LP020
HOCT	Colon Tumor	pSport 1	LP020
HTNT	Tongue Tumour	pSport 1	LP020
HLXN	Larynx Normal	pSport 1	LP020
HLXT	Larynx Tumour	pSport 1	LP020
HTYN	Thymus	pSport 1	LP020
HPLN	Placenta	pSport 1	LP020
HTNG	Tongue Normal	pSport 1	LP020
HZAA	Thyroid Normal (SDCA2 No)	pSport 1	LP020
HWES	Thyroid Thyroiditis	pSport 1	LP020
HFHD	Ficoll Human Stromal Cells, 5Fu treated	pTrip1Ex2	LP021
HFHM,HFHN	Ficoll Human Stromal Cells, Untreated	pTrip1Ex2	LP021
HPCI	Hep G2 Cells, lambda library	lambda Zap-CMV XR	LP021
HBCA,HBCB,HBCC	H. Lymph node breast Cancer	Uni-ZAP XR	LP021
HCOK	Chondrocytes	pSPORT1	LP022
HDCA, HDCB, HDCC	Dendritic Cells From CD34 Cells	pSPORT1	LP022
HDMA, HDMB	CD40 activated monocyte dendritic cells	pSPORT1	LP022
HDDM, HDDN, HDDO	LPS activated derived dendritic cells	pSPORT1	LP022
HPCR	Hep G2 Cells, PCR library	lambda Zap-CMV XR	LP022
HAAA, HAAB, HAAC	Lung, Cancer (4005313A3): Invasive Poorly Differentiated Lung Adenocarcinoma	pSPORT1	LP022
HIPB, HIPB, HIPC	Lung, Cancer (4005163 B7): Invasive, Poorly Diff. Adenocarcinoma, Metastatic	pSPORT1	LP022
HOOH, HOOI	Ovary, Cancer: (4004562 B6) Papillary Serous Cystic Neoplasm, Low Malignant Pot	pSPORT1	LP022
HIDA	Lung, Normal: (4005313 B1)	pSPORT1	LP022
HUJA,HUJB,HUJC,HUJD,HUIE	B-Cells	pCMVSPORT 3.0	LP022
HNOA,HNOB,HNOC,HNOD	Ovary, Normal: (9805C040R)	pSPORT1	LP022

Libraries owned by Catalog	Catalog Description	Vector	ATCC Deposit
HNLM	Lung, Normal: (4005313 B1)	pSPORT1	LP022
HSCL	Stromal Cells	pSPORT1	LP022
HAAX	Lung, Cancer: (4005313 A3) Invasive Poorly-differentiated Metastatic lung adenocarcinoma	pSPORT1	LP022
HUUA,HUUB,HUUC,HUUD	B-cells (unstimulated)	pTrip1Ex2	LP022
HWWA,HWWB,HWWC,HWW D,HWWE,HWWF,HWWG	B-cells (stimulated)	pSPORT1	LP022
HCCC	Colon, Cancer: (9808C064R)	pCMVSPORT 3.0	LP023
HPDO HPDP HPDQ HPDR HPD	Ovary, Cancer (9809C332): Poorly differentiated adenocarcinoma	pSport 1	LP023
HPCO HPCP HPCQ HPCT	Ovary, Cancer (15395A1F): Grade II Papillary Carcinoma	pSport 1	LP023
HOCM HOCO HOCB HOCQ	Ovary, Cancer: (15799A1F) Poorly differentiated carcinoma	pSport 1	LP023
HCBM HCBN HCBO	Breast, Cancer: (4004943 A5)	pSport 1	LP023
HNBT HNBU HNBV	Breast, Normal: (4005522B2)	pSport 1	LP023
HBCP HBCQ	Breast, Cancer: (4005522 A2)	pSport 1	LP023
HBCJ	Breast, Cancer: (9806C012R)	pSport 1	LP023
HSAM HSAN	Stromal cells 3.88	pSport 1	LP023
HVCA HVCB HVCC HVCD	Ovary, Cancer: (4004332 A2)	pSport 1	LP023
HSCK HSEN HSEO	Stromal cells (HBM3.18)	pSport 1	LP023
HSCP HSCQ	stromal cell clone 2.5	pSport 1	LP023
HUXA	Breast Cancer: (4005385 A2)	pSport 1	LP023
HCOM HCON HCOO HCOP HCOQ	Ovary, Cancer (4004650 A3): Well-Differentiated Micropapillary Serous Carcinoma	pSport 1	LP023
HBNM	Breast, Cancer: (9802C020E)	pSport 1	LP023
HVVA HVVB HVVC HVVD HVVE	Human Bone Marrow, treated	pSport 1	LP023

Two nonlimiting examples are provided below for isolating a particular clone from the deposited sample of plasmid cDNAs cited for that clone in Table 7. First, a plasmid is directly
5 isolated by screening the clones using a polynucleotide probe corresponding to the nucleotide sequence of SEQ ID NO:X.

Particularly, a specific polynucleotide with 30-40 nucleotides is synthesized using an Applied Biosystems DNA synthesizer according to the sequence reported. The oligonucleotide is labeled, for instance, with ³²P-γ-ATP using T4 polynucleotide kinase and purified according to
10 routine methods. (E.g., Maniatis et al., Molecular Cloning: A Laboratory Manual, Cold Spring Harbor Press, Cold Spring, NY (1982)). The plasmid mixture is transformed into a suitable host, as indicated above (such as XL-1 Blue (Stratagene)) using techniques known to those of skill in the art, such as those provided by the vector supplier or in related publications or patents cited above. The transformants are plated on 1.5% agar plates (containing the appropriate selection

agent, e.g., ampicillin) to a density of about 150 transformants (colonies) per plate. These plates are screened using Nylon membranes according to routine methods for bacterial colony screening (e.g., Sambrook et al., *Molecular Cloning: A Laboratory Manual*, 2nd Edit., (1989), Cold Spring Harbor Laboratory Press, pages 1.93 to 1.104), or other techniques known to those of skill in the art.

Alternatively, two primers of 17-20 nucleotides derived from both ends of the nucleotide sequence of SEQ ID NO:X are synthesized and used to amplify the desired cDNA using the deposited cDNA plasmid as a template. The polymerase chain reaction is carried out under routine conditions, for instance, in 25 μ l of reaction mixture with 0.5 μ g of the above cDNA template. A convenient reaction mixture is 1.5-5 mM $MgCl_2$, 0.01% (w/v) gelatin, 20 μ M each of dATP, dCTP, dGTP, dTTP, 25 pmol of each primer and 0.25 Unit of Taq polymerase. Thirty five cycles of PCR (denaturation at 94°C for 1 min; annealing at 55°C for 1 min; elongation at 72°C for 1 min) are performed with a Perkin-Elmer Cetus automated thermal cycler. The amplified product is analyzed by agarose gel electrophoresis and the DNA band with expected molecular weight is excised and purified. The PCR product is verified to be the selected sequence by subcloning and sequencing the DNA product.

Several methods are available for the identification of the 5' or 3' non-coding portions of a gene which may not be present in the deposited clone. These methods include but are not limited to, filter probing, clone enrichment using specific probes, and protocols similar or identical to 5' and 3' "RACE" protocols which are well known in the art. For instance, a method similar to 5' RACE is available for generating the missing 5' end of a desired full-length transcript. (Fromont-Racine et al., *Nucleic Acids Res.* 21(7):1683-1684 (1993)).

Briefly, a specific RNA oligonucleotide is ligated to the 5' ends of a population of RNA presumably containing full-length gene RNA transcripts. A primer set containing a primer specific to the ligated RNA oligonucleotide and a primer specific to a known sequence of the gene of interest is used to PCR amplify the 5' portion of the desired full-length gene. This amplified product may then be sequenced and used to generate the full length gene.

This above method starts with total RNA isolated from the desired source, although poly-A+ RNA can be used. The RNA preparation can then be treated with phosphatase if necessary to eliminate 5' phosphate groups on degraded or damaged RNA which may interfere with the later RNA ligase step. The phosphatase should then be inactivated and the RNA treated with tobacco acid pyrophosphatase in order to remove the cap structure present at the 5' ends of messenger RNAs. This reaction leaves a 5' phosphate group at the 5' end of the cap cleaved RNA which can then be ligated to an RNA oligonucleotide using T4 RNA ligase.

This modified RNA preparation is used as a template for first strand cDNA synthesis using a gene specific oligonucleotide. The first strand synthesis reaction is used as a template for PCR amplification of the desired 5' end using a primer specific to the ligated RNA oligonucleotide

and a primer specific to the known sequence of the gene of interest. The resultant product is then sequenced and analyzed to confirm that the 5' end sequence belongs to the desired gene.

Example 2: Isolation of Genomic Clones Corresponding to a Polynucleotide

5

A human genomic P1 library (Genomic Systems, Inc.) is screened by PCR using primers selected for the sequence corresponding to SEQ ID NO:X according to the method described in Example 1. (See also, Sambrook.)

10

Example 3: Tissue specific expression analysis

The Human Genome Sciences, Inc. (HGS) database is derived from sequencing tissue and/or disease specific cDNA libraries. Libraries generated from a particular tissue are selected and the specific tissue expression pattern of EST groups or assembled contigs within these
15 libraries is determined by comparison of the expression patterns of those groups or contigs within the entire database. ESTs and assembled contigs which show tissue specific expression are selected.

The original clone from which the specific EST sequence was generated, or in the case of an assembled contig, the clone from which the 5' most EST sequence was generated, is obtained
20 from the catalogued library of clones and the insert amplified by PCR using methods known in the art. The PCR product is denatured and then transferred in 96 or 384 well format to a nylon membrane (Schleicher and Schuell) generating an array filter of tissue specific clones. Housekeeping genes, maize genes, and known tissue specific genes are included on the filters. These targets can be used in signal normalization and to validate assay sensitivity. Additional
25 targets are included to monitor probe length and specificity of hybridization.

Radioactively labeled hybridization probes are generated by first strand cDNA synthesis per the manufacturer's instructions (Life Technologies) from mRNA/RNA samples prepared from the specific tissue being analyzed (e.g., prostate, prostate cancer, ovarian, ovarian cancer, etc.). The hybridization probes are purified by gel exclusion chromatography, quantitated, and
30 hybridized with the array filters in hybridization bottles at 65°C overnight. The filters are washed under stringent conditions and signals are captured using a Fuji phosphorimager.

Data is extracted using AIS software and following background subtraction, signal normalization is performed. This includes a normalization of filter-wide expression levels between different experimental runs. Genes that are differentially expressed in the tissue of interest are
35 identified.

Example 4: Chromosomal Mapping of the Polynucleotides

An oligonucleotide primer set is designed according to the sequence at the 5' end of SEQ ID NO:X. This primer preferably spans about 100 nucleotides. This primer set is then used in a polymerase chain reaction under the following set of conditions: 30 seconds, 95°C; 1 minute, 56°C; 1 minute, 70°C. This cycle is repeated 32 times followed by one 5 minute cycle at 70°C. Human, mouse, and hamster DNA is used as template in addition to a somatic cell hybrid panel containing individual chromosomes or chromosome fragments (Bios, Inc). The reactions are analyzed on either 8% polyacrylamide gels or 3.5 % agarose gels. Chromosome mapping is determined by the presence of an approximately 100 bp PCR fragment in the particular somatic cell hybrid.

Example 5: Bacterial Expression of a Polypeptide

A polynucleotide encoding a polypeptide of the present invention is amplified using PCR oligonucleotide primers corresponding to the 5' and 3' ends of the DNA sequence, as outlined in Example 1, to synthesize insertion fragments. The primers used to amplify the cDNA insert should preferably contain restriction sites, such as BamHI and XbaI, at the 5' end of the primers in order to clone the amplified product into the expression vector. For example, BamHI and XbaI correspond to the restriction enzyme sites on the bacterial expression vector pQE-9. (Qiagen, Inc., Chatsworth, CA). This plasmid vector encodes antibiotic resistance (Amp^r), a bacterial origin of replication (ori), an IPTG-regulatable promoter/operator (P/O), a ribosome binding site (RBS), a 6-histidine tag (6-His), and restriction enzyme cloning sites.

The pQE-9 vector is digested with BamHI and XbaI and the amplified fragment is ligated into the pQE-9 vector maintaining the reading frame initiated at the bacterial RBS. The ligation mixture is then used to transform the E. coli strain M15/rep4 (Qiagen, Inc.) which contains multiple copies of the plasmid pREP4, which expresses the lacI repressor and also confers kanamycin resistance (Kan^r). Transformants are identified by their ability to grow on LB plates and ampicillin/kanamycin resistant colonies are selected. Plasmid DNA is isolated and confirmed by restriction analysis.

Clones containing the desired constructs are grown overnight (O/N) in liquid culture in LB media supplemented with both Amp (100 ug/ml) and Kan (25 ug/ml). The O/N culture is used to inoculate a large culture at a ratio of 1:100 to 1:250. The cells are grown to an optical density 600 (O.D.⁶⁰⁰) of between 0.4 and 0.6. IPTG (Isopropyl-B-D-thiogalacto pyranoside) is then added to a final concentration of 1 mM. IPTG induces by inactivating the lacI repressor, clearing the P/O leading to increased gene expression.

Cells are grown for an extra 3 to 4 hours. Cells are then harvested by centrifugation (20 mins at 6000Xg). The cell pellet is solubilized in the chaotropic agent 6 Molar Guanidine HCl by stirring for 3-4 hours at 4°C. The cell debris is removed by centrifugation, and the supernatant containing the polypeptide is loaded onto a nickel-nitrilo-tri-acetic acid ("Ni-NTA") affinity resin column (available from QIAGEN, Inc., *supra*). Proteins with a 6 x His tag bind to the Ni-NTA resin with high affinity and can be purified in a simple one-step procedure (for details see: The QIAexpressionist (1995) QIAGEN, Inc., *supra*).

Briefly, the supernatant is loaded onto the column in 6 M guanidine-HCl, pH 8. The column is first washed with 10 volumes of 6 M guanidine-HCl, pH 8, then washed with 10 volumes of 6 M guanidine-HCl pH 6, and finally the polypeptide is eluted with 6 M guanidine-HCl, pH 5.

The purified protein is then renatured by dialyzing it against phosphate-buffered saline (PBS) or 50 mM Na-acetate, pH 6 buffer plus 200 mM NaCl. Alternatively, the protein can be successfully refolded while immobilized on the Ni-NTA column. The recommended conditions are as follows: renature using a linear 6M-1M urea gradient in 500 mM NaCl, 20% glycerol, 20 mM Tris/HCl pH 7.4, containing protease inhibitors. The renaturation should be performed over a period of 1.5 hours or more. After renaturation the proteins are eluted by the addition of 250 mM imidazole. Imidazole is removed by a final dialyzing step against PBS or 50 mM sodium acetate pH 6 buffer plus 200 mM NaCl. The purified protein is stored at 4°C or frozen at -80°C.

In addition to the above expression vector, the present invention further includes an expression vector, called pHE4a (ATCC Accession Number 209645, deposited on February 25, 1998) which contains phage operator and promoter elements operatively linked to a polynucleotide of the present invention, called pHE4a. (ATCC Accession Number 209645, deposited on February 25, 1998.) This vector contains: 1) a neomycinphosphotransferase gene as a selection marker, 2) an E. coli origin of replication, 3) a T5 phage promoter sequence, 4) two lac operator sequences, 5) a Shine-Delgarno sequence, and 6) the lactose operon repressor gene (*lacIq*). The origin of replication (*oriC*) is derived from pUC19 (LTI, Gaithersburg, MD). The promoter and operator sequences are made synthetically.

DNA can be inserted into the pHE4a by restricting the vector with NdeI and XbaI, BamHI, XhoI, or Asp718, running the restricted product on a gel, and isolating the larger fragment (the stuffer fragment should be about 310 base pairs). The DNA insert is generated according to the PCR protocol described in Example 1, using PCR primers having restriction sites for NdeI (5' primer) and XbaI, BamHI, XhoI, or Asp718 (3' primer). The PCR insert is gel purified and restricted with compatible enzymes. The insert and vector are ligated according to standard protocols.

The engineered vector could easily be substituted in the above protocol to express protein in a bacterial system.

Example 6: Purification of a Polypeptide from an Inclusion Body

The following alternative method can be used to purify a polypeptide expressed in *E. coli* when it is present in the form of inclusion bodies. Unless otherwise specified, all of the following steps are conducted at 4-10°C.

Upon completion of the production phase of the *E. coli* fermentation, the cell culture is cooled to 4-10°C and the cells harvested by continuous centrifugation at 15,000 rpm (Heraeus Sepatech). On the basis of the expected yield of protein per unit weight of cell paste and the amount of purified protein required, an appropriate amount of cell paste, by weight, is suspended in a buffer solution containing 100 mM Tris, 50 mM EDTA, pH 7.4. The cells are dispersed to a homogeneous suspension using a high shear mixer.

The cells are then lysed by passing the solution through a microfluidizer (Microfluidics, Corp. or APV Gaulin, Inc.) twice at 4000-6000 psi. The homogenate is then mixed with NaCl solution to a final concentration of 0.5 M NaCl, followed by centrifugation at 7000 xg for 15 min. The resultant pellet is washed again using 0.5M NaCl, 100 mM Tris, 50 mM EDTA, pH 7.4.

The resulting washed inclusion bodies are solubilized with 1.5 M guanidine hydrochloride (GuHCl) for 2-4 hours. After 7000 xg centrifugation for 15 min., the pellet is discarded and the polypeptide containing supernatant is incubated at 4°C overnight to allow further GuHCl extraction.

Following high speed centrifugation (30,000 xg) to remove insoluble particles, the GuHCl solubilized protein is refolded by quickly mixing the GuHCl extract with 20 volumes of buffer containing 50 mM sodium, pH 4.5, 150 mM NaCl, 2 mM EDTA by vigorous stirring. The refolded diluted protein solution is kept at 4°C without mixing for 12 hours prior to further purification steps.

To clarify the refolded polypeptide solution, a previously prepared tangential filtration unit equipped with 0.16 µm membrane filter with appropriate surface area (e.g., Filtron), equilibrated with 40 mM sodium acetate, pH 6.0 is employed. The filtered sample is loaded onto a cation exchange resin (e.g., Poros HS-50, Perseptive Biosystems). The column is washed with 40 mM sodium acetate, pH 6.0 and eluted with 250 mM, 500 mM, 1000 mM, and 1500 mM NaCl in the same buffer, in a stepwise manner. The absorbance at 280 nm of the effluent is continuously monitored. Fractions are collected and further analyzed by SDS-PAGE.

Fractions containing the polypeptide are then pooled and mixed with 4 volumes of water. The diluted sample is then loaded onto a previously prepared set of tandem columns of strong anion (Poros HQ-50, Perseptive Biosystems) and weak anion (Poros CM-20, Perseptive Biosystems) exchange resins. The columns are equilibrated with 40 mM sodium acetate, pH 6.0.

Both columns are washed with 40 mM sodium acetate, pH 6.0, 200 mM NaCl. The CM-20 column is then eluted using a 10 column volume linear gradient ranging from 0.2 M NaCl, 50 mM sodium acetate, pH 6.0 to 1.0 M NaCl, 50 mM sodium acetate, pH 6.5. Fractions are collected under constant A_{280} monitoring of the effluent. Fractions containing the polypeptide (determined, for instance, by 16% SDS-PAGE) are then pooled.

The resultant polypeptide should exhibit greater than 95% purity after the above refolding and purification steps. No major contaminant bands should be observed from Commassie blue stained 16% SDS-PAGE gel when 5 μ g of purified protein is loaded. The purified protein can also be tested for endotoxin/LPS contamination, and typically the LPS content is less than 0.1 ng/ml according to LAL assays.

Example 7: Cloning and Expression of a Polypeptide in a Baculovirus Expression System

In this example, the plasmid shuttle vector pA2 is used to insert a polynucleotide into a baculovirus to express a polypeptide. This expression vector contains the strong polyhedrin promoter of the *Autographa californica* nuclear polyhedrosis virus (AcMNPV) followed by convenient restriction sites such as BamHI, Xba I and Asp718. The polyadenylation site of the simian virus 40 ("SV40") is used for efficient polyadenylation. For easy selection of recombinant virus, the plasmid contains the beta-galactosidase gene from *E. coli* under control of a weak *Drosophila* promoter in the same orientation, followed by the polyadenylation signal of the polyhedrin gene. The inserted genes are flanked on both sides by viral sequences for cell-mediated homologous recombination with wild-type viral DNA to generate a viable virus that express the cloned polynucleotide.

Many other baculovirus vectors can be used in place of the vector above, such as pAc373, pVL941, and pAcIM1, as one skilled in the art would readily appreciate, as long as the construct provides appropriately located signals for transcription, translation, secretion and the like, including a signal peptide and an in-frame AUG as required. Such vectors are described, for instance, in Luckow et al., Virology 170:31-39 (1989).

Specifically, the cDNA sequence contained in the deposited clone, including the AUG initiation codon, is amplified using the PCR protocol described in Example 1. If a naturally occurring signal sequence is used to produce the polypeptide of the present invention, the pA2 vector does not need a second signal peptide. Alternatively, the vector can be modified (pA2 GP) to include a baculovirus leader sequence, using the standard methods described in Summers et al., "A Manual of Methods for Baculovirus Vectors and Insect Cell Culture Procedures," Texas Agricultural Experimental Station Bulletin No. 1555 (1987).

The amplified fragment is isolated from a 1% agarose gel using a commercially available kit ("GeneClean," BIO 101 Inc., La Jolla, Ca.). The fragment then is digested with appropriate restriction enzymes and again purified on a 1% agarose gel.

5 The plasmid is digested with the corresponding restriction enzymes and optionally, can be dephosphorylated using calf intestinal phosphatase, using routine procedures known in the art. The DNA is then isolated from a 1% agarose gel using a commercially available kit ("GeneClean" BIO 101 Inc., La Jolla, Ca.).

10 The fragment and the dephosphorylated plasmid are ligated together with T4 DNA ligase. *E. coli* HB101 or other suitable *E. coli* hosts such as XL-1 Blue (Stratagene Cloning Systems, La Jolla, CA) cells are transformed with the ligation mixture and spread on culture plates. Bacteria containing the plasmid are identified by digesting DNA from individual colonies and analyzing the digestion product by gel electrophoresis. The sequence of the cloned fragment is confirmed by DNA sequencing.

15 Five μg of a plasmid containing the polynucleotide is co-transfected with 1.0 μg of a commercially available linearized baculovirus DNA ("BaculoGold™ baculovirus DNA, Pharmingen, San Diego, CA), using the lipofection method described by Felgner et al., Proc. Natl. Acad. Sci. USA 84:7413-7417 (1987). One μg of BaculoGold™ virus DNA and 5 μg of the plasmid are mixed in a sterile well of a microtiter plate containing 50 μl of serum-free Grace's medium (Life Technologies Inc., Gaithersburg, MD). Afterwards, 10 μl Lipofectin plus 90 μl 20 Grace's medium are added, mixed and incubated for 15 minutes at room temperature. Then the transfection mixture is added drop-wise to Sf9 insect cells (ATCC CRL 1711) seeded in a 35 mm tissue culture plate with 1 ml Grace's medium without serum. The plate is then incubated for 5 hours at 27° C. The transfection solution is then removed from the plate and 1 ml of Grace's insect medium supplemented with 10% fetal calf serum is added. Cultivation is then continued at 27° C 25 for four days.

After four days the supernatant is collected and a plaque assay is performed, as described by Summers and Smith, *supra*. An agarose gel with "Blue Gal" (Life Technologies Inc., Gaithersburg) is used to allow easy identification and isolation of gal-expressing clones, which produce blue-stained plaques. (A detailed description of a "plaque assay" of this type can also be 30 found in the user's guide for insect cell culture and baculovirology distributed by Life Technologies Inc., Gaithersburg, page 9-10.) After appropriate incubation, blue stained plaques are picked with the tip of a micropipettor (e.g., Eppendorf). The agar containing the recombinant viruses is then resuspended in a microcentrifuge tube containing 200 μl of Grace's medium and the suspension containing the recombinant baculovirus is used to infect Sf9 cells seeded in 35 mm 35 dishes. Four days later the supernatants of these culture dishes are harvested and then they are stored at 4° C.

To verify the expression of the polypeptide, Sf9 cells are grown in Grace's medium supplemented with 10% heat-inactivated FBS. The cells are infected with the recombinant baculovirus containing the polynucleotide at a multiplicity of infection ("MOI") of about 2. If radiolabeled proteins are desired, 6 hours later the medium is removed and is replaced with SF900
5 II medium minus methionine and cysteine (available from Life Technologies Inc., Rockville, MD). After 42 hours, 5 μ Ci of 35 S-methionine and 5 μ Ci 35 S-cysteine (available from Amersham) are added. The cells are further incubated for 16 hours and then are harvested by centrifugation. The proteins in the supernatant as well as the intracellular proteins are analyzed by SDS-PAGE followed by autoradiography (if radiolabeled).

10 Microsequencing of the amino acid sequence of the amino terminus of purified protein may be used to determine the amino terminal sequence of the produced protein.

Example 8: Expression of a Polypeptide in Mammalian Cells

15 The polypeptide of the present invention can be expressed in a mammalian cell. A typical mammalian expression vector contains a promoter element, which mediates the initiation of transcription of mRNA, a protein coding sequence, and signals required for the termination of transcription and polyadenylation of the transcript. Additional elements include enhancers, Kozak sequences and intervening sequences flanked by donor and acceptor sites for RNA splicing.
20 Highly efficient transcription is achieved with the early and late promoters from SV40, the long terminal repeats (LTRs) from Retroviruses, e.g., RSV, HTLV, HIV and the early promoter of the cytomegalovirus (CMV). However, cellular elements can also be used (e.g., the human actin promoter).

Suitable expression vectors for use in practicing the present invention include, for
25 example, vectors such as pSVL and pMSG (Pharmacia, Uppsala, Sweden), pRSVcat (ATCC 37152), pSV2dhfr (ATCC 37146), pBC12MI (ATCC 67109), pCMVSPORT 2.0, and pCMVSPORT 3.0. Mammalian host cells that could be used include, human HeLa, 293, H9 and Jurkat cells, mouse NIH3T3 and C127 cells, Cos 1, Cos 7 and CV1, quail QC1-3 cells, mouse L cells and Chinese hamster ovary (CHO) cells.

30 Alternatively, the polypeptide can be expressed in stable cell lines containing the polynucleotide integrated into a chromosome. The co-transfection with a selectable marker such as DHFR, gpt, neomycin, or hygromycin allows the identification and isolation of the transfected cells.

The transfected gene can also be amplified to express large amounts of the encoded
35 protein. The DHFR (dihydrofolate reductase) marker is useful in developing cell lines that carry several hundred or even several thousand copies of the gene of interest. (See, e.g., Alt, F. W., et

al., J. Biol. Chem. 253:1357-1370 (1978); Hamlin, J. L. and Ma, C., Biochem. et Biophys. Acta, 1097:107-143 (1990); Page, M. J. and Sydenham, M. A., Biotechnology 9:64-68 (1991)). Another useful selection marker is the enzyme glutamine synthase (GS) (Murphy et al., Biochem J. 227:277-279 (1991); Bebbington et al., Bio/Technology 10:169-175 (1992). Using these markers, the mammalian cells are grown in selective medium and the cells with the highest resistance are selected. These cell lines contain the amplified gene(s) integrated into a chromosome. Chinese hamster ovary (CHO) and NSO cells are often used for the production of proteins.

Derivatives of the plasmid pSV2-dhfr (ATCC Accession No. 37146), the expression vectors pC4 (ATCC Accession No. 209646) and pC6 (ATCC Accession No. 209647) contain the strong promoter (LTR) of the Rous Sarcoma Virus (Cullen et al., Molecular and Cellular Biology, 438-447 (March, 1985)) plus a fragment of the CMV-enhancer (Boshart et al., Cell 41:521-530 (1985)). Multiple cloning sites, e.g., with the restriction enzyme cleavage sites BamHI, XbaI and Asp718, facilitate the cloning of the gene of interest. The vectors also contain the 3' intron, the polyadenylation and termination signal of the rat preproinsulin gene, and the mouse DHFR gene under control of the SV40 early promoter.

Specifically, the plasmid pC6, for example, is digested with appropriate restriction enzymes and then dephosphorylated using calf intestinal phosphates by procedures known in the art. The vector is then isolated from a 1% agarose gel.

A polynucleotide of the present invention is amplified according to the protocol outlined in Example 1. If a naturally occurring signal sequence is used to produce the polypeptide of the present invention, the vector does not need a second signal peptide. Alternatively, if a naturally occurring signal sequence is not used, the vector can be modified to include a heterologous signal sequence. (See, e.g., International Publication No. WO 96/34891.)

The amplified fragment is isolated from a 1% agarose gel using a commercially available kit ("GeneClean," BIO 101 Inc., La Jolla, Ca.). The fragment then is digested with appropriate restriction enzymes and again purified on a 1% agarose gel.

The amplified fragment is then digested with the same restriction enzyme and purified on a 1% agarose gel. The isolated fragment and the dephosphorylated vector are then ligated with T4 DNA ligase. *E. coli* HB101 or XL-1 Blue cells are then transformed and bacteria are identified that contain the fragment inserted into plasmid pC6 using, for instance, restriction enzyme analysis.

Chinese hamster ovary cells lacking an active DHFR gene is used for transfection. Five μ g of the expression plasmid pC6 or pC4 is cotransfected with 0.5 μ g of the plasmid pSVneo using lipofectin (Felgner et al., *supra*). The plasmid pSV2-neo contains a dominant selectable marker, the *neo* gene from Tn5 encoding an enzyme that confers resistance to a group of antibiotics including G418. The cells are seeded in alpha minus MEM supplemented with 1 mg/ml G418. After 2 days, the cells are trypsinized and seeded in hybridoma cloning plates

(Greiner, Germany) in alpha minus MEM supplemented with 10, 25, or 50 ng/ml of methotrexate plus 1 mg/ml G418. After about 10-14 days single clones are trypsinized and then seeded in 6-well petri dishes or 10 ml flasks using different concentrations of methotrexate (50 nM, 100 nM, 200 nM, 400 nM, 800 nM). Clones growing at the highest concentrations of methotrexate are then
5 transferred to new 6-well plates containing even higher concentrations of methotrexate (1 μ M, 2 μ M, 5 μ M, 10 mM, 20 mM). The same procedure is repeated until clones are obtained which grow at a concentration of 100 - 200 μ M. Expression of the desired gene product is analyzed, for instance, by SDS-PAGE and Western blot or by reversed phase HPLC analysis.

10

Example 9: Protein Fusions

The polypeptides of the present invention are preferably fused to other proteins. These fusion proteins can be used for a variety of applications. For example, fusion of the present polypeptides to His-tag, HA-tag, protein A, IgG domains, and maltose binding protein facilitates
15 purification. (See Example 5; see also EP A 394,827; Traunecker, et al., Nature 331:84-86 (1988)). Similarly, fusion to IgG-1, IgG-3, and albumin increases the half-life time *in vivo*. Nuclear localization signals fused to the polypeptides of the present invention can target the protein to a specific subcellular localization, while covalent heterodimer or homodimers can increase or decrease the activity of a fusion protein. Fusion proteins can also create chimeric molecules
20 having more than one function. Finally, fusion proteins can increase solubility and/or stability of the fused protein compared to the non-fused protein. All of the types of fusion proteins described above can be made by modifying the following protocol, which outlines the fusion of a polypeptide to an IgG molecule, or the protocol described in Example 5.

Briefly, the human Fc portion of the IgG molecule can be PCR amplified, using primers
25 that span the 5' and 3' ends of the sequence described below. These primers also should have convenient restriction enzyme sites that will facilitate cloning into an expression vector, preferably a mammalian expression vector.

For example, if pC4 (ATCC Accession No. 209646) is used, the human Fc portion can be ligated into the BamHI cloning site. Note that the 3' BamHI site should be destroyed. Next, the
30 vector containing the human Fc portion is re-restricted with BamHI, linearizing the vector, and a polynucleotide of the present invention, isolated by the PCR protocol described in Example 1, is ligated into this BamHI site. Note that the polynucleotide is cloned without a stop codon, otherwise a fusion protein will not be produced.

If the naturally occurring signal sequence is used to produce the polypeptide of the present
35 invention, pC4 does not need a second signal peptide. Alternatively, if the naturally occurring signal sequence is not used, the vector can be modified to include a heterologous signal sequence. (See, e.g., International Publication No. WO 96/34891.)

Human IgG Fc region:

GGGATCCGGAGCCCAAATCTTCTGACAAAACCTCACACATGCCCACCGTGCCCA
 GCACCTGAATTCGAGGGTGCACCGTCAGTCTTCTCTTCCCCCAAACCCAAGGACA
 5 CCCTCATGATCTCCCGGACTCCTGAGGTACATGCGTGGTGGTGGACGTAAGCCACGA
 AGACCCTGAGGTCAAGTTCAACTGGTACGTGGACGGCGTGGAGGTGCATAATGCCAA
 GACAAAGCCGCGGGAGGAGCAGTACAACAGCACGTACCGTGTGGTCAGCGTCTCTCAC
 CGTCCTGCACCAGGACTGGCTGAATGGCAAGGAGTACAAGTGCAAGGTCTCCAACAA
 AGCCCTCCCAACCCCATCGAGAAAACCATCTCCAAAGCCAAAGGGCAGCCCCGAGA
 10 ACCACAGGTGTACACCCTGCCCCATCCCGGGATGAGCTGACCAAGAACCAGGTGAG
 CCTGACCTGCCTGGTCAAAGGCTTCTATCCAAGCGACATCGCCGTGGAGTGGGAGAG
 CAATGGGCAGCCGGAGAACAACCTACAAGACCACGCCTCCCGTGCTGGACTCCGACGG
 CTCCTTCTTCTCTACAGCAAGCTCACCGTGGACAAGAGCAGGTGGCAGCAGGGGAA
 CGTCTTCTCATGCTCCGTGATGCATGAGGCTCTGCACAACCACTACACGCAGAAGAGC
 15 CTCTCCCTGTCTCCGGGTAAATGAGTGCGACGGCCGCGACTCTAGAGGAT (SEQ ID
 NO: 1)

Example 10: Production of an Antibody from a Polypeptide

20 a) Hybridoma Technology

The antibodies of the present invention can be prepared by a variety of methods. (See, Current Protocols, Chapter 2.) As one example of such methods, cells expressing a polypeptide of the present invention are administered to an animal to induce the production of sera containing polyclonal antibodies. In a preferred method, a preparation of a polypeptide of the present
 25 invention is prepared and purified to render it substantially free of natural contaminants. Such a preparation is then introduced into an animal in order to produce polyclonal antisera of greater specific activity.

Monoclonal antibodies specific for a polypeptide of the present invention are prepared using hybridoma technology (Kohler et al., Nature 256:495 (1975); Kohler et al., Eur. J. Immunol.
 30 6:511 (1976); Kohler et al., Eur. J. Immunol. 6:292 (1976); Hammerling et al., in: Monoclonal Antibodies and T-Cell Hybridomas, Elsevier, N.Y., pp. 563-681 (1981)). In general, an animal (preferably a mouse) is immunized with a polypeptide of the present invention or, more preferably, with a secreted polypeptide-expressing cell. Such polypeptide-expressing cells are cultured in any suitable tissue culture medium, preferably in Earle's modified Eagle's medium supplemented with
 35 10% fetal bovine serum (inactivated at about 56°C), and supplemented with about 10 g/l of nonessential amino acids, about 1,000 U/ml of penicillin, and about 100 µg/ml of streptomycin.

The splenocytes of such mice are extracted and fused with a suitable myeloma cell line. Any suitable myeloma cell line may be employed in accordance with the present invention; however, it is preferable to employ the parent myeloma cell line (SP2O), available from the ATCC. After fusion, the resulting hybridoma cells are selectively maintained in HAT medium, and then cloned by limiting dilution as described by Wands et al. (Gastroenterology 80:225-232 (1981)). The hybridoma cells obtained through such a selection are then assayed to identify clones which secrete antibodies capable of binding the polypeptide of the present invention.

Alternatively, additional antibodies capable of binding to a polypeptide of the present invention can be produced in a two-step procedure using anti-idiotypic antibodies. Such a method makes use of the fact that antibodies are themselves antigens, and therefore, it is possible to obtain an antibody which binds to a second antibody. In accordance with this method, protein specific antibodies are used to immunize an animal, preferably a mouse. The splenocytes of such an animal are then used to produce hybridoma cells, and the hybridoma cells are screened to identify clones which produce an antibody whose ability to bind to the polypeptide-specific antibody can be blocked by said polypeptide. Such antibodies comprise anti-idiotypic antibodies to the polypeptide-specific antibody and are used to immunize an animal to induce formation of further polypeptide-specific antibodies.

For *in vivo* use of antibodies in humans, an antibody is "humanized". Such antibodies can be produced using genetic constructs derived from hybridoma cells producing the monoclonal antibodies described above. Methods for producing chimeric and humanized antibodies are known in the art and are discussed herein. (See, for review, Morrison, Science 229:1202 (1985); Oi et al., BioTechniques 4:214 (1986); Cabilly et al., U.S. Patent No. 4,816,567; Taniguchi et al., EP 171496; Morrison et al., EP 173494; Neuberger et al., WO 8601533; Robinson et al., International Publication No. WO 8702671; Boulianne et al., Nature 312:643 (1984); Neuberger et al., Nature 314:268 (1985)).

b) Isolation Of Antibody Fragments Directed Against a Polypeptide of the Present Invention From A Library Of scFvs

Naturally occurring V-genes isolated from human PBLs are constructed into a library of antibody fragments which contain reactivities against a polypeptide of the present invention to which the donor may or may not have been exposed (see e.g., U.S. Patent 5,885,793 incorporated herein by reference in its entirety).

Rescue of the Library. A library of scFvs is constructed from the RNA of human PBLs as described in International Publication No. WO 92/01047. To rescue phage displaying antibody fragments, approximately 10^9 *E. coli* harboring the phagemid are used to inoculate 50 ml of 2xTY containing 1% glucose and 100 μ g/ml of ampicillin (2xTY-AMP-GLU) and grown to an O.D. of 0.8 with shaking. Five ml of this culture is used to inoculate 50 ml of 2xTY-AMP-GLU, 2×10^8

TU of delta gene 3 helper (M13 delta gene III, see International Publication No. WO 92/01047) are added and the culture incubated at 37°C for 45 minutes without shaking and then at 37°C for 45 minutes with shaking. The culture is centrifuged at 4000 r.p.m. for 10 min. and the pellet resuspended in 2 liters of 2xTY containing 100 µg/ml ampicillin and 50 µg/ml kanamycin and grown overnight. Phage are prepared as described in International Publication No. WO 92/01047.

M13 delta gene III is prepared as follows: M13 delta gene III helper phage does not encode gene III protein, hence the phage(mid) displaying antibody fragments have a greater avidity of binding to antigen. Infectious M13 delta gene III particles are made by growing the helper phage in cells harboring a pUC19 derivative supplying the wild type gene III protein during phage morphogenesis. The culture is incubated for 1 hour at 37° C without shaking and then for a further hour at 37°C with shaking. Cells are spun down (IEC-Centra 8,400 r.p.m. for 10 min), resuspended in 300 ml 2xTY broth containing 100 µg ampicillin/ml and 25 µg kanamycin/ml (2xTY-AMP-KAN) and grown overnight, shaking at 37°C. Phage particles are purified and concentrated from the culture medium by two PEG-precipitations (Sambrook et al., 1990), resuspended in 2 ml PBS and passed through a 0.45 µm filter (Minisart NML; Sartorius) to give a final concentration of approximately 10¹³ transducing units/ml (ampicillin-resistant clones).

Panning of the Library. Immunotubes (Nunc) are coated overnight in PBS with 4 ml of either 100 µg/ml or 10 µg/ml of a polypeptide of the present invention. Tubes are blocked with 2% Marvel-PBS for 2 hours at 37°C and then washed 3 times in PBS. Approximately 10¹³ TU of phage is applied to the tube and incubated for 30 minutes at room temperature tumbling on an over and under turntable and then left to stand for another 1.5 hours. Tubes are washed 10 times with PBS 0.1% Tween-20 and 10 times with PBS. Phage are eluted by adding 1 ml of 100 mM triethylamine and rotating 15 minutes on an under and over turntable after which the solution is immediately neutralized with 0.5 ml of 1.0M Tris-HCl, pH 7.4. Phage are then used to infect 10 ml of mid-log E. coli TG1 by incubating eluted phage with bacteria for 30 minutes at 37°C. The E. coli are then plated on TYE plates containing 1% glucose and 100 µg/ml ampicillin. The resulting bacterial library is then rescued with delta gene 3 helper phage as described above to prepare phage for a subsequent round of selection. This process is then repeated for a total of 4 rounds of affinity purification with tube-washing increased to 20 times with PBS, 0.1% Tween-20 and 20 times with PBS for rounds 3 and 4.

Characterization of Binders. Eluted phage from the 3rd and 4th rounds of selection are used to infect E. coli HB 2151 and soluble scFv is produced (Marks, et al., 1991) from single colonies for assay. ELISAs are performed with microtitre plates coated with either 10 µg/ml of the polypeptide of the present invention in 50 mM bicarbonate pH 9.6. Clones positive in ELISA are further characterized by PCR fingerprinting (see, e.g., International Publication No. WO 92/01047) and then by sequencing. These ELISA positive clones may also be further characterized by techniques known in the art, such as, for example, epitope mapping, binding

affinity, receptor signal transduction, ability to block or competitively inhibit antibody/antigen binding, and competitive agonistic or antagonistic activity.

Example 11: Method of Determining Alterations in a Gene Corresponding to a Polynucleotide

5

RNA isolated from entire families or individual patients presenting with a gastrointestinal disease or disorder is isolated. cDNA is then generated from these RNA samples using protocols known in the art. (See, Sambrook.) The cDNA is then used as a template for PCR, employing
10 primers surrounding regions of interest in SEQ ID NO:X; and/or the nucleotide sequence of the cDNA contained in ATCC Deposit No:Z. Suggested PCR conditions consist of 35 cycles at 95 degrees C for 30 seconds; 60-120 seconds at 52-58 degrees C; and 60-120 seconds at 70 degrees C, using buffer solutions described in Sidransky et al., Science 252:706 (1991).

PCR products are then sequenced using primers labeled at their 5' end with T4
15 polynucleotide kinase, employing SequiTherm Polymerase (Epicentre Technologies). The intron-exon boundaries of selected exons is also determined and genomic PCR products analyzed to confirm the results. PCR products harboring suspected mutations are then cloned and sequenced to validate the results of the direct sequencing.

PCR products are cloned into T-tailed vectors as described in Holton et al., Nucleic Acids
20 Research, 19:1156 (1991) and sequenced with T7 polymerase (United States Biochemical). Affected individuals are identified by mutations not present in unaffected individuals.

Genomic rearrangements are also observed as a method of determining alterations in a gene corresponding to a polynucleotide. Genomic clones isolated according to Example 2 are nick-translated with digoxigenin deoxy-uridine 5'-triphosphate (Boehringer Mannheim), and FISH
25 performed as described in Johnson et al., Methods Cell Biol. 35:73-99 (1991). Hybridization with the labeled probe is carried out using a vast excess of human cot-1 DNA for specific hybridization to the corresponding genomic locus.

Chromosomes are counterstained with 4,6-diamino-2-phenylidole and propidium iodide, producing a combination of C- and R-bands. Aligned images for precise mapping are obtained
30 using a triple-band filter set (Chroma Technology, Brattleboro, VT) in combination with a cooled charge-coupled device camera (Photometrics, Tucson, AZ) and variable excitation wavelength filters. (Johnson et al., Genet. Anal. Tech. Appl., 8:75 (1991)). Image collection, analysis and chromosomal fractional length measurements are performed using the ISee Graphical Program System. (Inovision Corporation, Durham, NC.) Chromosome alterations of the genomic region
35 hybridized by the probe are identified as insertions, deletions, and translocations. These alterations are used as a diagnostic marker for an associated disease.

Example 12: Method of Detecting Abnormal Levels of a Polypeptide in a Biological Sample

A polypeptide of the present invention can be detected in a biological sample, and if an
5 increased or decreased level of the polypeptide is detected, this polypeptide is a marker for a particular phenotype. Methods of detection are numerous, and thus, it is understood that one skilled in the art can modify the following assay to fit their particular needs.

For example, antibody-sandwich ELISAs are used to detect polypeptides in a sample, preferably a biological sample. Wells of a microtiter plate are coated with specific antibodies, at a
10 final concentration of 0.2 to 10 ug/ml. The antibodies are either monoclonal or polyclonal and are produced by the method described in Example 10. The wells are blocked so that non-specific binding of the polypeptide to the well is reduced.

The coated wells are then incubated for > 2 hours at RT with a sample containing the polypeptide. Preferably, serial dilutions of the sample should be used to validate results. The
15 plates are then washed three times with deionized or distilled water to remove unbound polypeptide.

Next, 50 ul of specific antibody-alkaline phosphatase conjugate, at a concentration of 25-400 ng, is added and incubated for 2 hours at room temperature. The plates are again washed three times with deionized or distilled water to remove unbound conjugate.

20 Add 75 ul of 4-methylumbelliferyl phosphate (MUP) or p-nitrophenyl phosphate (NPP) substrate solution to each well and incubate 1 hour at room temperature. Measure the reaction by a microtiter plate reader. Prepare a standard curve, using serial dilutions of a control sample, and plot polypeptide concentration on the X-axis (log scale) and fluorescence or absorbance of the Y-axis (linear scale). Interpolate the concentration of the polypeptide in the sample using the
25 standard curve.

Example 13: Formulation

The invention also provides methods of preventing, treating and/or ameliorating a
30 gastrointestinal disease or disorder by administration to a subject of an effective amount of a Therapeutic. By therapeutic is meant polynucleotides or polypeptides of the invention (including fragments and variants), agonists or antagonists thereof, and/or antibodies thereto, in combination with a pharmaceutically acceptable carrier type (e.g., a sterile carrier).

The Therapeutic will be formulated and dosed in a fashion consistent with good medical
35 practice, taking into account the clinical condition of the individual patient (especially the side effects of treatment with the Therapeutic alone), the site of delivery, the method of administration,

the scheduling of administration, and other factors known to practitioners. The "effective amount" for purposes herein is thus determined by such considerations.

As a general proposition, the total pharmaceutically effective amount of the Therapeutic administered parenterally per dose will be in the range of about 1 $\mu\text{g}/\text{kg}/\text{day}$ to 10 $\text{mg}/\text{kg}/\text{day}$ of patient body weight, although, as noted above, this will be subject to therapeutic discretion. More preferably, this dose is at least 0.01 $\text{mg}/\text{kg}/\text{day}$, and most preferably for humans between about 0.01 and 1 $\text{mg}/\text{kg}/\text{day}$ for the hormone. If given continuously, the Therapeutic is typically administered at a dose rate of about 1 $\mu\text{g}/\text{kg}/\text{hour}$ to about 50 $\mu\text{g}/\text{kg}/\text{hour}$, either by 1-4 injections per day or by continuous subcutaneous infusions, for example, using a mini-pump. An intravenous bag solution may also be employed. The length of treatment needed to observe changes and the interval following treatment for responses to occur appears to vary depending on the desired effect.

Therapeutics can be administered orally, rectally, parenterally, intracisternally, intravaginally, intraperitoneally, topically (as by powders, ointments, gels, drops or transdermal patch), buccally, or as an oral or nasal spray. "Pharmaceutically acceptable carrier" refers to a non-toxic solid, semisolid or liquid filler, diluent, encapsulating material or formulation auxiliary of any. The term "parenteral" as used herein refers to modes of administration which include intravenous, intramuscular, intraperitoneal, intrasternal, subcutaneous and intraarticular injection and infusion.

Therapeutics of the invention are also suitably administered by sustained-release systems. Suitable examples of sustained-release Therapeutics are administered orally, rectally, parenterally, intracisternally, intravaginally, intraperitoneally, topically (as by powders, ointments, gels, drops or transdermal patch), buccally, or as an oral or nasal spray. "Pharmaceutically acceptable carrier" refers to a non-toxic solid, semisolid or liquid filler, diluent, encapsulating material or formulation auxiliary of any type. The term "parenteral" as used herein refers to modes of administration which include intravenous, intramuscular, intraperitoneal, intrasternal, subcutaneous and intraarticular injection and infusion.

Therapeutics of the invention are also suitably administered by sustained-release systems. Suitable examples of sustained-release Therapeutics include suitable polymeric materials (such as, for example, semi-permeable polymer matrices in the form of shaped articles, e.g., films, or microcapsules), suitable hydrophobic materials (for example as an emulsion in an acceptable oil) or ion exchange resins, and sparingly soluble derivatives (such as, for example, a sparingly soluble salt).

Sustained-release matrices include polylactides (U.S. Pat. No. 3,773,919, EP 58,481), copolymers of L-glutamic acid and gamma-ethyl-L-glutamate (Sidman et al., Biopolymers 22:547-556 (1983)), poly (2-hydroxyethyl methacrylate) (Langer et al., J. Biomed. Mater. Res.

15:167-277 (1981), and Langer, Chem. Tech. 12:98-105 (1982)), ethylene vinyl acetate (Langer et al., Id.) or poly-D- (-)-3-hydroxybutyric acid (EP 133,988).

In a preferred embodiment, polypeptide, polynucleotide, and antibody compositions of the invention are formulated in a biodegradable, polymeric drug delivery system, for example as
5 described in U.S. Patent Nos. 4,938,763; 5,278,201; 5,278,202; 5,324,519; 5,340,849; and 5,487,897 and in International Publication Numbers WO01/35929, WO00/24374, and WO00/06117 which are hereby incorporated by reference in their entirety. In specific preferred embodiments the polypeptide, polynucleotide, and antibody compositions of the invention are formulated using the ATRIGEL® Biodegradable System of Atrix Laboratories, Inc. (Fort Collins,
10 Colorado).

Examples of biodegradable polymers which can be used in the formulation of polypeptide, polynucleotide, and antibody compositions, include but are not limited to, polylactides, polyglycolides, polycaprolactones, polyanhydrides, polyamides, polyurethanes, polyesteramides, polyorthoesters, polydioxanones, polyacetals, polyketals, polycarbonates, polyorthocarbonates,
15 polyphosphazenes, polyhydroxybutyrates, polyhydroxyvalerates, polyalkylene oxalates, polyalkylene succinates, poly(malic acid), poly(amino acids), poly(methyl vinyl ether), poly(maleic anhydride), polyvinylpyrrolidone, polyethylene glycol, polyhydroxycellulose, chitin, chitosan, and copolymers, terpolymers, or combinations or mixtures of the above materials. The preferred polymers are those that have a lower degree of crystallization and are more hydrophobic.
20 These polymers and copolymers are more soluble in the biocompatible solvents than the highly crystalline polymers such as polyglycolide and chitin which also have a high degree of hydrogen-bonding. Preferred materials with the desired solubility parameters are the polylactides, polycaprolactones, and copolymers of these with glycolide in which there are more amorphous regions to enhance solubility. In specific preferred embodiments, the biodegradable polymers
25 which can be used in the formulation of polypeptide, polynucleotide, and antibody compositions are poly(lactide-co-glycolides). Polymer properties such as molecular weight, hydrophobicity, and lactide/glycolide ratio may be modified to obtain the desired polypeptide, polynucleotide, or antibody release profile (See, e.g., Ravivarapu et al., Journal of Pharmaceutical Sciences 89:732-741 (2000), which is hereby incorporated by reference in its entirety).

30 It is also preferred that the solvent for the biodegradable polymer be non-toxic, water miscible, and otherwise biocompatible. Examples of such solvents include, but are not limited to, N-methyl-2-pyrrolidone, 2-pyrrolidone, C2 to C6 alkanols, C1 to C15 alcohols, diols, triols, and tetraols such as ethanol, glycerine propylene glycol, butanol; C3 to C15 alkyl ketones such as acetone, diethyl ketone and methyl ethyl ketone; C3 to C15 esters such as methyl acetate, ethyl
35 acetate, ethyl lactate; alkyl ketones such as methyl ethyl ketone, C1 to C15 amides such as dimethylformamide, dimethylacetamide and caprolactam; C3 to C20 ethers such as tetrahydrofuran, or solketal; tweens, triacetin, propylene carbonate, decylmethylsulfoxide,

dimethyl sulfoxide, oleic acid, 1-dodecylazacycloheptan-2-one, Other preferred solvents are benzyl alcohol, benzyl benzoate, dipropylene glycol, tributyrin, ethyl oleate, glycerin, glycofural, isopropyl myristate, isopropyl palmitate, oleic acid, polyethylene glycol, propylene carbonate, and triethyl citrate. The most preferred solvents are N-methyl-2-pyrrolidone, 2-pyrrolidone, dimethyl sulfoxide, triacetin, and propylene carbonate because of the solvating ability and their compatibility.

Additionally, formulations comprising polypeptide, polynucleotide, and antibody compositions and a biodegradable polymer may also include release-rate modification agents and/or pore-forming agents. Examples of release-rate modification agents include, but are not limited to, fatty acids, triglycerides, other like hydrophobic compounds, organic solvents, plasticizing compounds and hydrophilic compounds. Suitable release rate modification agents include, for example, esters of mono-, di-, and tricarboxylic acids, such as 2-ethoxyethyl acetate, methyl acetate, ethyl acetate, diethyl phthalate, dimethyl phthalate, dibutyl phthalate, dimethyl adipate, dimethyl succinate, dimethyl oxalate, dimethyl citrate, triethyl citrate, acetyl tributyl citrate, acetyl triethyl citrate, glycerol triacetate, di(n-butyl) sebecate, and the like; polyhydroxy alcohols, such as propylene glycol, polyethylene glycol, glycerin, sorbitol, and the like; fatty acids; triesters of glycerol, such as triglycerides, epoxidized soybean oil, and other epoxidized vegetable oils; sterols, such as cholesterol; alcohols, such as C.sub.6 -C.sub.12 alkanols, 2-ethoxyethanol. The release rate modification agent may be used singly or in combination with other such agents. Suitable combinations of release rate modification agents include, but are not limited to, glycerin/propylene glycol, sorbitol/glycerine, ethylene oxide/propylene oxide, butylene glycol/adipic acid, and the like. Preferred release rate modification agents include, but are not limited to, dimethyl citrate, triethyl citrate, ethyl heptanoate, glycerin, and hexanediol. Suitable pore-forming agents that may be used in the polymer composition include, but are not limited to, sugars such as sucrose and dextrose, salts such as sodium chloride and sodium carbonate, polymers such as hydroxylpropylcellulose, carboxymethylcellulose, polyethylene glycol, and polyvinylpyrrolidone. Solid crystals that will provide a defined pore size, such as salt or sugar, are preferred.

In specific preferred embodiments the polypeptide, polynucleotide, and antibody compositions of the invention are formulated using the BEMA™ BioErodible Mucoadhesive System, MCA™ MucoCutaneous Absorption System, SMP™ Solvent MicroParticle System, or BCPT™ BioCompatible Polymer System of Atrix Laboratories, Inc. (Fort Collins, Colorado).

Sustained-release Therapeutics also include liposomally entrapped Therapeutics of the invention (see generally, Langer, *Science* 249:1527-1533 (1990); Treat et al., in *Liposomes in the Therapy of Infectious Disease and Cancer*, Lopez-Berestein and Fidler (eds.), Liss, New York, pp. 317 -327 and 353-365 (1989)). Liposomes containing the Therapeutic are prepared by methods known per se: DE 3,218,121; Epstein et al., *Proc. Natl. Acad. Sci. (USA)* 82:3688-3692 (1985);

Hwang et al., Proc. Natl. Acad. Sci.(USA) 77:4030-4034 (1980); EP 52,322; EP 36,676; EP 88,046; EP 143,949; EP 142,641; Japanese Pat. Appl. 83-118008; U.S. Pat. Nos. 4,485,045 and 4,544,545; and EP 102,324. Ordinarily, the liposomes are of the small (about 200-800 Angstroms) unilamellar type in which the lipid content is greater than about 30 mol. percent cholesterol, the selected proportion being adjusted for the optimal Therapeutic.

In yet an additional embodiment, the Therapeutics of the invention are delivered by way of a pump (*see* Langer, *supra*; Sefton, CRC Crit. Ref. Biomed. Eng. 14:201 (1987); Buchwald et al., Surgery 88:507 (1980); Saudek et al., N. Engl. J. Med. 321:574 (1989)).

Other controlled release systems are discussed in the review by Langer (*Science* 249:1527-1533 (1990)).

For parenteral administration, in one embodiment, the Therapeutic is formulated generally by mixing it at the desired degree of purity, in a unit dosage injectable form (solution, suspension, or emulsion), with a pharmaceutically acceptable carrier, i.e., one that is non-toxic to recipients at the dosages and concentrations employed and is compatible with other ingredients of the formulation. For example, the formulation preferably does not include oxidizing agents and other compounds that are known to be deleterious to the Therapeutic.

Generally, the formulations are prepared by contacting the Therapeutic uniformly and intimately with liquid carriers or finely divided solid carriers or both. Then, if necessary, the product is shaped into the desired formulation. Preferably the carrier is a parenteral carrier, more preferably a solution that is isotonic with the blood of the recipient. Examples of such carrier vehicles include water, saline, Ringer's solution, and dextrose solution. Non-aqueous vehicles such as fixed oils and ethyl oleate are also useful herein, as well as liposomes.

The carrier suitably contains minor amounts of additives such as substances that enhance isotonicity and chemical stability. Such materials are non-toxic to recipients at the dosages and concentrations employed, and include buffers such as phosphate, citrate, succinate, acetic acid, and other organic acids or their salts; antioxidants such as ascorbic acid; low molecular weight (less than about ten residues) polypeptides, e.g., polyarginine or tripeptides; proteins, such as serum albumin, gelatin, or immunoglobulins; hydrophilic polymers such as polyvinylpyrrolidone; amino acids, such as glycine, glutamic acid, aspartic acid, or arginine; monosaccharides, disaccharides, and other carbohydrates including cellulose or its derivatives, glucose, manose, or dextrans; chelating agents such as EDTA; sugar alcohols such as mannitol or sorbitol; counterions such as sodium; and/or nonionic surfactants such as polysorbates, poloxamers, or PEG.

The Therapeutic is typically formulated in such vehicles at a concentration of about 0.1 mg/ml to 100 mg/ml, preferably 1-10 mg/ml, at a pH of about 3 to 8. It will be understood that the use of certain of the foregoing excipients, carriers, or stabilizers will result in the formation of polypeptide salts.

Any pharmaceutical used for therapeutic administration can be sterile. Sterility is readily accomplished by filtration through sterile filtration membranes (e.g., 0.2 micron membranes). Therapeutics generally are placed into a container having a sterile access port, for example, an intravenous solution bag or vial having a stopper pierceable by a hypodermic injection needle.

5 Therapeutics ordinarily will be stored in unit or multi-dose containers, for example, sealed ampoules or vials, as an aqueous solution or as a lyophilized formulation for reconstitution. As an example of a lyophilized formulation, 10-ml vials are filled with 5 ml of sterile-filtered 1% (w/v) aqueous Therapeutic solution, and the resulting mixture is lyophilized. The infusion solution is prepared by reconstituting the lyophilized Therapeutic using bacteriostatic Water-for-Injection.

10 The invention also provides a pharmaceutical pack or kit comprising one or more containers filled with one or more of the ingredients of the Therapeutics of the invention. Associated with such container(s) can be a notice in the form prescribed by a governmental agency regulating the manufacture, use or sale of pharmaceuticals or biological products, which notice reflects approval by the agency of manufacture, use or sale for human administration. In addition,
15 the Therapeutics may be employed in conjunction with other therapeutic compounds.

 The Therapeutics of the invention may be administered alone or in combination with adjuvants. Adjuvants that may be administered with the Therapeutics of the invention include, but are not limited to, alum, alum plus deoxycholate (ImmunoAg), MTP-PE (Biocine Corp.), QS21 (Genentech, Inc.), BCG (e.g., THERACYS®), MPL and nonviable preparations of
20 *Corynebacterium parvum*. In a specific embodiment, Therapeutics of the invention are administered in combination with alum. In another specific embodiment, Therapeutics of the invention are administered in combination with QS-21. Further adjuvants that may be administered with the Therapeutics of the invention include, but are not limited to, Monophosphoryl lipid immunomodulator, AdjuVax 100a, QS-21, QS-18, CRL1005, Aluminum
25 salts, MF-59, and Virosomal adjuvant technology. Vaccines that may be administered with the Therapeutics of the invention include, but are not limited to, vaccines directed toward protection against MMR (measles, mumps, rubella), polio, varicella, tetanus/diphtheria, hepatitis A, hepatitis B, haemophilus influenzae B, whooping cough, pneumonia, influenza, Lyme's Disease, rotavirus, cholera, yellow fever, Japanese encephalitis, poliomyelitis, rabies, typhoid fever, and pertussis.
30 Combinations may be administered either concomitantly, e.g., as an admixture, separately but simultaneously or concurrently; or sequentially. This includes presentations in which the combined agents are administered together as a therapeutic mixture, and also procedures in which the combined agents are administered separately but simultaneously, e.g., as through separate intravenous lines into the same individual. Administration "in combination" further includes the
35 separate administration of one of the compounds or agents given first, followed by the second.

 The Therapeutics of the invention may be administered alone or in combination with other therapeutic agents. Therapeutic agents that may be administered in combination with the

Therapeutics of the invention, include but not limited to, chemotherapeutic agents, antibiotics, steroidal and non-steroidal anti-inflammatories, conventional immunotherapeutic agents, and/or therapeutic treatments described below. Combinations may be administered either concomitantly, e.g., as an admixture, separately but simultaneously or concurrently; or sequentially. This includes
5 presentations in which the combined agents are administered together as a therapeutic mixture, and also procedures in which the combined agents are administered separately but simultaneously, e.g., as through separate intravenous lines into the same individual. Administration "in combination" further includes the separate administration of one of the compounds or agents given first, followed by the second.

10 In one embodiment, the Therapeutics of the invention are administered in combination with an anticoagulant. Anticoagulants that may be administered with the compositions of the invention include, but are not limited to, heparin, low molecular weight heparin, warfarin sodium (e.g., COUMADIN®), dicumarol, 4-hydroxycoumarin, anisindione (e.g., MIRADON™), acenocoumarol (e.g., nicoumalone, SINTHROME™), indan-1,3-dione, phenprocoumon (e.g.,
15 MARCUMAR™), ethyl biscoumacetate (e.g., TROMEXAN™), and aspirin. In a specific embodiment, compositions of the invention are administered in combination with heparin and/or warfarin. In another specific embodiment, compositions of the invention are administered in combination with warfarin. In another specific embodiment, compositions of the invention are administered in combination with warfarin and aspirin. In another specific embodiment, compositions of the invention are administered in combination with heparin. In another specific
20 embodiment, compositions of the invention are administered in combination with heparin and aspirin.

In another embodiment, the Therapeutics of the invention are administered in combination with thrombolytic drugs. Thrombolytic drugs that may be administered with the compositions of
25 the invention include, but are not limited to, plasminogen, lys-plasminogen, alpha2-antiplasmin, streptokinase (e.g., KABIKINASE™), antirespace (e.g., EMINASE™), tissue plasminogen activator (t-PA, altevase, ACTIVASE™), urokinase (e.g., ABBOKINASE™), sauruplase, (Prourokinase, single chain urokinase), and aminocaproic acid (e.g., AMICAR™). In a specific embodiment, compositions of the invention are administered in combination with tissue
30 plasminogen activator and aspirin.

In another embodiment, the Therapeutics of the invention are administered in combination with antiplatelet drugs. Antiplatelet drugs that may be administered with the compositions of the invention include, but are not limited to, aspirin, dipyridamole (e.g., PERSANTINE™), and ticlopidine (e.g., TICLID™).

35 In specific embodiments, the use of anti-coagulants, thrombolytic and/or antiplatelet drugs in combination with Therapeutics of the invention is contemplated for the detection, prevention, diagnosis, prognostication, treatment, and/or amelioration of thrombosis, arterial thrombosis,

venous thrombosis, thromboembolism, pulmonary embolism, atherosclerosis, myocardial infarction, transient ischemic attack, unstable angina. In specific embodiments, the use of anticoagulants, thrombolytic drugs and/or antiplatelet drugs in combination with Therapeutics of the invention is contemplated for the prevention of occlusion of saphenous grafts, for reducing the risk of periprocedural thrombosis as might accompany angioplasty procedures, for reducing the risk of stroke in patients with atrial fibrillation including nonrheumatic atrial fibrillation, for reducing the risk of embolism associated with mechanical heart valves and or mitral valves disease. Other uses for the therapeutics of the invention, alone or in combination with antiplatelet, anticoagulant, and/or thrombolytic drugs, include, but are not limited to, the prevention of occlusions in extracorporeal devices (e.g., intravascular canulas, vascular access shunts in hemodialysis patients, hemodialysis machines, and cardiopulmonary bypass machines).

In certain embodiments, Therapeutics of the invention are administered in combination with antiretroviral agents, nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs), non-nucleoside reverse transcriptase inhibitors (NNRTIs), and/or protease inhibitors (PIs). NRTIs that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, RETROVIR™ (zidovudine/AZT), VIDEX™ (didanosine/ddI), HIVID™ (zalcitabine/ddC), ZERTI™ (stavudine/d4T), EPIVIR™ (lamivudine/3TC), and COMBIVIR™ (zidovudine/lamivudine). NNRTIs that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, VIRAMUNE™ (nevirapine), RESCRIPTOR™ (delavirdine), and SUSTIVA™ (efavirenz). Protease inhibitors that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, CRIXIVAN™ (indinavir), NORVIR™ (ritonavir), INVIRASE™ (saquinavir), and VIRACEPT™ (nelfinavir). In a specific embodiment, antiretroviral agents, nucleoside reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors, and/or protease inhibitors may be used in any combination with Therapeutics of the invention to treat AIDS and/or to prevent or treat HIV infection.

Additional NRTIs include LODENOSINE™ (F-ddA; an acid-stable adenosine NRTI; Triangle/Abbott; COVIRACIL™ (emtricitabine/FTC; structurally related to lamivudine (3TC) but with 3- to 10-fold greater activity *in vitro*; Triangle/Abbott); dOTC (BCH-10652, also structurally related to lamivudine but retains activity against a substantial proportion of lamivudine-resistant isolates; Biochem Pharma); Adefovir (refused approval for anti-HIV therapy by FDA; Gilead Sciences); PREVEON® (Adefovir Dipivoxil, the active prodrug of adefovir; its active form is PMEA-pp); TENOFOVIR™ (bis-POC PMPA, a PMPA prodrug; Gilead); DAPD/DXG (active metabolite of DAPD; Triangle/Abbott); D-D4FC (related to 3TC, with activity against AZT/3TC-resistant virus); GW420867X (Glaxo Wellcome); ZIAGEN™ (abacavir/159U89; Glaxo Wellcome

Inc.); CS-87 (3'-azido-2',3'-dideoxyuridine; WO 99/66936); and S-acyl-2-thioethyl (SATE)-bearing prodrug forms of β -L-FD4C and β -L-FddC (WO 98/17281).

Additional NNRTIs include COACTINON™ (Emivirine/MKC-442, potent NNRTI of the HEPT class; Triangle/Abbott); CAPRAVIRINE™ (AG-1549/S-1153, a next generation NNRTI with activity against viruses containing the K103N mutation; Agouron); PNU-142721 (has 20- to 50-fold greater activity than its predecessor delavirdine and is active against K103N mutants; Pharmacia & Upjohn); DPC-961 and DPC-963 (second-generation derivatives of efavirenz, designed to be active against viruses with the K103N mutation; DuPont); GW-420867X (has 25-fold greater activity than HBY097 and is active against K103N mutants; Glaxo Wellcome); CALANOLIDE A (naturally occurring agent from the latex tree; active against viruses containing either or both the Y181C and K103N mutations); and Propolis (WO 99/49830).

Additional protease inhibitors include LOPINAVIR™ (ABT378/r; Abbott Laboratories); BMS-232632 (an azapeptide; Bristol-Myers Squibb); TIPRANAVIR™ (PNU-140690, a non-peptic dihydropyrene; Pharmacia & Upjohn); PD-178390 (a nonpeptidic dihydropyrene; Parke-Davis); BMS 232632 (an azapeptide; Bristol-Myers Squibb); L-756,423 (an indinavir analog; Merck); DMP-450 (a cyclic urea compound; Avid & DuPont); AG-1776 (a peptidomimetic with *in vitro* activity against protease inhibitor-resistant viruses; Agouron); VX-175/GW-433908 (phosphate prodrug of amprenavir; Vertex & Glaxo Wellcome); CGP61755 (Ciba); and AGENERASE™ (amprenavir; Glaxo Wellcome Inc.).

Additional antiretroviral agents include fusion inhibitors/gp41 binders. Fusion inhibitors/gp41 binders include T-20 (a peptide from residues 643-678 of the HIV gp41 transmembrane protein ectodomain which binds to gp41 in its resting state and prevents transformation to the fusogenic state; Trimeris) and T-1249 (a second-generation fusion inhibitor; Trimeris).

Additional antiretroviral agents include fusion inhibitors/chemokine receptor antagonists. Fusion inhibitors/chemokine receptor antagonists include CXCR4 antagonists such as AMD 3100 (a bicyclam), SDF-1 and its analogs, and ALX40-4C (a cationic peptide), T22 (an 18 amino acid peptide; Trimeris) and the T22 analogs T134 and T140; CCR5 antagonists such as RANTES (9-68), AOP-RANTES, NNY-RANTES, and TAK-779; and CCR5/CXCR4 antagonists such as NSC 651016 (a distamycin analog). Also included are CCR2B, CCR3, and CCR6 antagonists. Chemokine receptor agonists such as RANTES, SDF-1, MIP-1 α , MIP-1 β , etc., may also inhibit fusion.

Additional antiretroviral agents include integrase inhibitors. Integrase inhibitors include dicaffeoylquinic (DFQA) acids; L-chicoric acid (a dicaffeoyltartaric (DCTA) acid); quinalizarin (QLC) and related anthraquinones; ZINTEVIR™ (AR 177, an oligonucleotide that probably acts at

cell surface rather than being a true integrase inhibitor; Arondex); and naphthols such as those disclosed in WO 98/50347.

Additional antiretroviral agents include hydroxyurea-like compounds such as BCX-34 (a purine nucleoside phosphorylase inhibitor; Biocryst); ribonucleotide reductase inhibitors such as DIDOX™ (Molecules for Health); inosine monophosphate dehydrogenase (IMPDH) inhibitors such as VX-497 (Vertex); and mycopholic acids such as CellCept (mycophenolate mofetil; Roche).

Additional antiretroviral agents include inhibitors of viral integrase, inhibitors of viral genome nuclear translocation such as arylene bis(methylketone) compounds; inhibitors of HIV entry such as AOP-RANTES, NNY-RANTES, RANTES-IgG fusion protein, soluble complexes of RANTES and glycosaminoglycans (GAG), and AMD-3100; nucleocapsid zinc finger inhibitors such as dithiane compounds; targets of HIV Tat and Rev; and pharmacoenhancers such as ABT-378.

Other antiretroviral therapies and adjunct therapies include cytokines and lymphokines such as MIP-1 α , MIP-1 β , SDF-1 α , IL-2, PROLEUKIN™ (aldesleukin/L2-7001; Chiron), IL-4, IL-10, IL-12, and IL-13; interferons such as IFN- α 2a; antagonists of TNFs, NF κ B, GM-CSF, M-CSF, and IL-10; agents that modulate immune activation such as cyclosporin and prednisone; vaccines such as Remune™ (HIV Immunogen), APL 400-003 (Apollon), recombinant gp120 and fragments, bivalent (B/E) recombinant envelope glycoprotein, rgp120CM235, MN rgp120, SF-2 rgp120, gp120/soluble CD4 complex, Delta JR-FL protein, branched synthetic peptide derived from discontinuous gp120 C3/C4 domain, fusion-competent immunogens, and Gag, Pol, Nef, and Tat vaccines; gene-based therapies such as genetic suppressor elements (GSEs; WO 98/54366), and intrakines (genetically modified CC chemokines targetted to the ER to block surface expression of newly synthesized CCR5 (Yang *et al.*, *PNAS* 94:11567-72 (1997); Chen *et al.*, *Nat. Med.* 3:1110-16 (1997)); antibodies such as the anti-CXCR4 antibody 12G5, the anti-CCR5 antibodies 2D7, 5C7, PA8, PA9, PA10, PA11, PA12, and PA14, the anti-CD4 antibodies Q4120 and RPA-T4, the anti-CCR3 antibody 7B11, the anti-gp120 antibodies 17b, 48d, 447-52D, 257-D, 268-D and 50.1, anti-Tat antibodies, anti-TNF- α antibodies, and monoclonal antibody 33A; aryl hydrocarbon (AH) receptor agonists and antagonists such as TCDD, 3,3',4,4',5-pentachlorobiphenyl, 3,3',4,4'-tetrachlorobiphenyl, and α -naphthoflavone (WO 98/30213); and antioxidants such as γ -L-glutamyl-L-cysteine ethyl ester (γ -GCE; WO 99/56764).

In a further embodiment, the Therapeutics of the invention are administered in combination with an antiviral agent. Antiviral agents that may be administered with the Therapeutics of the invention include, but are not limited to, acyclovir, ribavirin, amantadine, and remantidine.

In other embodiments, Therapeutics of the invention may be administered in combination with anti-opportunistic infection agents. Anti-opportunistic agents that may be administered in combination with the Therapeutics of the invention, include, but are not limited to, TRIMETHOPRIM-SULFAMETHOXAZOLE™, DAPSONE™, PENTAMIDINE™, ATOVAQUONE™, ISONIAZID™, RIFAMPIN™, PYRAZINAMIDE™, ETHAMBUTOL™, RIFABUTIN™, CLARITHROMYCIN™, AZITHROMYCIN™, GANCICLOVIR™, FOSCARNET™, CIDOFOVIR™, FLUCONAZOLE™, ITRACONAZOLE™, KETOCONAZOLE™, ACYCLOVIR™, FAMCICOLVIR™, PYRIMETHAMINE™, LEUCOVORIN™, NEUPOGEN™ (filgrastim/G-CSF), and LEUKINE™ (sargramostim/GM-CSF). In a specific embodiment, Therapeutics of the invention are used in any combination with TRIMETHOPRIM-SULFAMETHOXAZOLE™, DAPSONE™, PENTAMIDINE™, and/or ATOVAQUONE™ to prophylactically treat or prevent an opportunistic *Pneumocystis carinii* pneumonia infection. In another specific embodiment, Therapeutics of the invention are used in any combination with ISONIAZID™, RIFAMPIN™, PYRAZINAMIDE™, and/or ETHAMBUTOL™ to prophylactically treat or prevent an opportunistic *Mycobacterium avium* complex infection. In another specific embodiment, Therapeutics of the invention are used in any combination with RIFABUTIN™, CLARITHROMYCIN™, and/or AZITHROMYCIN™ to prophylactically treat or prevent an opportunistic *Mycobacterium tuberculosis* infection. In another specific embodiment, Therapeutics of the invention are used in any combination with GANCICLOVIR™, FOSCARNET™, and/or CIDOFOVIR™ to prophylactically treat or prevent an opportunistic cytomegalovirus infection. In another specific embodiment, Therapeutics of the invention are used in any combination with FLUCONAZOLE™, ITRACONAZOLE™, and/or KETOCONAZOLE™ to prophylactically treat or prevent an opportunistic fungal infection. In another specific embodiment, Therapeutics of the invention are used in any combination with ACYCLOVIR™ and/or FAMCICOLVIR™ to prophylactically treat or prevent an opportunistic herpes simplex virus type I and/or type II infection. In another specific embodiment, Therapeutics of the invention are used in any combination with PYRIMETHAMINE™ and/or LEUCOVORIN™ to prophylactically treat or prevent an opportunistic *Toxoplasma gondii* infection. In another specific embodiment, Therapeutics of the invention are used in any combination with LEUCOVORIN™ and/or NEUPOGEN™ to prophylactically treat or prevent an opportunistic bacterial infection.

In a further embodiment, the Therapeutics of the invention are administered in combination with an antibiotic agent. Antibiotic agents that may be administered with the Therapeutics of the invention include, but are not limited to, amoxicillin, beta-lactamases, aminoglycosides, beta-lactam (glycopeptide), beta-lactamases, Clindamycin, chloramphenicol,

cephalosporins, ciprofloxacin, erythromycin, fluoroquinolones, macrolides, metronidazole, penicillins, quinolones, rapamycin, rifampin, streptomycin, sulfonamide, tetracyclines, trimethoprim, trimethoprim-sulfamethoxazole, and vancomycin.

5 In other embodiments, the Therapeutics of the invention are administered in combination with immunostimulants. Immunostimulants that may be administered in combination with the Therapeutics of the invention include, but are not limited to, levamisole (e.g., ERGAMISOL™), isoprinosine (e.g. INOSIPLEX™), interferons (e.g. interferon alpha), and interleukins (e.g., IL-2).

10 In other embodiments, Therapeutics of the invention are administered in combination with immunosuppressive agents. Immunosuppressive agents that may be administered in combination with the Therapeutics of the invention include, but are not limited to, steroids, cyclosporine, cyclosporine analogs, cyclophosphamide methylprednisone, prednisone, azathioprine, FK-506, 15-deoxyspergualin, and other immunosuppressive agents that act by suppressing the function of responding T cells. Other immunosuppressive agents that may be administered in combination with the Therapeutics of the invention include, but are not limited to, prednisolone, methotrexate, 15 thalidomide, methoxsalen, rapamycin, leflunomide, mizoribine (BREDININ™), brequinar, deoxyspergualin, and azaspirane (SKF 105685), ORTHOCLONE OKT® 3 (muromonab-CD3), SANDIMMUNE™, NEORAL™, SANGDYA™ (cyclosporine), PROGRAF® (FK506, tacrolimus), CELLCEPT® (mycophenolate mofetil, of which the active metabolite is mycophenolic acid), IMURAN™ (azathioprine), glucocorticosteroids, adrenocortical steroids such as DELTASONE™ (prednisone) and HYDELTRASOL™ (prednisolone), FOLEX™ and 20 MEXATE™ (methotrexate), OXSORALEN-ULTRA™ (methoxsalen) and RAPAMUNE™ (sirolimus). In a specific embodiment, immunosuppressants may be used to prevent rejection of organ or bone marrow transplantation.

25 In an additional embodiment, Therapeutics of the invention are administered alone or in combination with one or more intravenous immune globulin preparations. Intravenous immune globulin preparations that may be administered with the Therapeutics of the invention include, but are not limited to, GAMMAR™, IVEEGAM™, SANDOGLOBULIN™, GAMMAGARD S/D™, ATGAM™ (antithymocyte globulin), and GAMIMUNE™. In a specific embodiment, Therapeutics of the invention are administered in combination with intravenous immune globulin 30 preparations in transplantation therapy (e.g., bone marrow transplant).

In certain embodiments, the Therapeutics of the invention are administered alone or in combination with an anti-inflammatory agent. Anti-inflammatory agents that may be administered with the Therapeutics of the invention include, but are not limited to, corticosteroids (e.g. betamethasone, budesonide, cortisone, dexamethasone, hydrocortisone, methylprednisolone, prednisolone, prednisone, and triamcinolone), nonsteroidal anti-inflammatory drugs (e.g., 35 diclofenac, diflunisal, etodolac, fenoprofen, floctafenine, flurbiprofen, ibuprofen, indomethacin,

ketoprofen, meclofenamate, mefenamic acid, meloxicam, nabumetone, naproxen, oxaprozin, phenylbutazone, piroxicam, sulindac, tenoxicam, tiaprofenic acid, and tolmetin.), as well as antihistamines, aminoarylcarboxylic acid derivatives, arylacetic acid derivatives, arylbutyric acid derivatives, arylcarboxylic acids, arylpropionic acid derivatives, pyrazoles, pyrazolones, salicylic acid derivatives, thiazinecarboxamides, e-acetamidocaproic acid, S-adenosylmethionine, 3-amino-4-hydroxybutyric acid, amixetrine, bendazac, benzydamine, bucolome, difenpiramide, ditazol, emorfazone, guaiazulene, nabumetone, nimesulide, orgotein, oxaceprol, paranyline, perisoxal, pifoxime, proquazone, proxazole, and tenidap.

In an additional embodiment, the compositions of the invention are administered alone or in combination with an anti-angiogenic agent. Anti-angiogenic agents that may be administered with the compositions of the invention include, but are not limited to, Angiostatin (Entremed, Rockville, MD), Troponin-1 (Boston Life Sciences, Boston, MA), anti-Invasive Factor, retinoic acid and derivatives thereof, paclitaxel (Taxol), Suramin, Tissue Inhibitor of Metalloproteinase-1, Tissue Inhibitor of Metalloproteinase-2, VEGI, Plasminogen Activator Inhibitor-1, Plasminogen Activator Inhibitor-2, and various forms of the lighter "d group" transition metals.

Lighter "d group" transition metals include, for example, vanadium, molybdenum, tungsten, titanium, niobium, and tantalum species. Such transition metal species may form transition metal complexes. Suitable complexes of the above-mentioned transition metal species include oxo transition metal complexes.

Representative examples of vanadium complexes include oxo vanadium complexes such as vanadate and vanadyl complexes. Suitable vanadate complexes include metavanadate and orthovanadate complexes such as, for example, ammonium metavanadate, sodium metavanadate, and sodium orthovanadate. Suitable vanadyl complexes include, for example, vanadyl acetylacetonate and vanadyl sulfate including vanadyl sulfate hydrates such as vanadyl sulfate mono- and trihydrates.

Representative examples of tungsten and molybdenum complexes also include oxo complexes. Suitable oxo tungsten complexes include tungstate and tungsten oxide complexes. Suitable tungstate complexes include ammonium tungstate, calcium tungstate, sodium tungstate dihydrate, and tungstic acid. Suitable tungsten oxides include tungsten (IV) oxide and tungsten (VI) oxide. Suitable oxo molybdenum complexes include molybdate, molybdenum oxide, and molybdenyl complexes. Suitable molybdate complexes include ammonium molybdate and its hydrates, sodium molybdate and its hydrates, and potassium molybdate and its hydrates. Suitable molybdenum oxides include molybdenum (VI) oxide, molybdenum (VI) oxide, and molybdic acid. Suitable molybdenyl complexes include, for example, molybdenyl acetylacetonate. Other suitable tungsten and molybdenum complexes include hydroxo derivatives derived from, for example, glycerol, tartaric acid, and sugars.

A wide variety of other anti-angiogenic factors may also be utilized within the context of the present invention. Representative examples include, but are not limited to, platelet factor 4; protamine sulphate; sulphated chitin derivatives (prepared from queen crab shells), (Murata et al., Cancer Res. 51:22-26, (1991)); Sulphated Polysaccharide Peptidoglycan Complex (SP- PG) (the
 5 function of this compound may be enhanced by the presence of steroids such as estrogen, and tamoxifen citrate); Staurosporine; modulators of matrix metabolism, including for example, proline analogs, cishydroxyproline, d,L-3,4-dehydroproline, Thiaproline, alpha,alpha-dipyridyl, aminopropionitrile fumarate; 4-propyl-5-(4-pyridinyl)-2(3H)-oxazolone; Methotrexate; Mitoxantrone; Heparin; Interferons; 2 Macroglobulin-serum; ChIMP-3 (Pavloff et al., J. Bio.
 10 Chem. 267:17321-17326, (1992)); Chymostatin (Tomkinson et al., Biochem J. 286:475-480, (1992)); Cyclodextrin Tetradecasulfate; Eponemycin; Camptothecin; Fumagillin (Ingber et al., Nature 348:555-557, (1990)); Gold Sodium Thiomalate ("GST"; Matsubara and Ziff, J. Clin. Invest. 79:1440-1446, (1987)); anticollagenase-serum; alpha2-antiplasmin (Holmes et al., J. Biol. Chem. 262(4):1659-1664, (1987)); Bisantrone (National Cancer Institute); Lobenzarit disodium
 15 (N-(2)-carboxyphenyl-4- chloroanthronilic acid disodium or "CCA"; (Takeuchi et al., Agents Actions 36:312-316, (1992)); and metalloproteinase inhibitors such as BB94.

Additional anti-angiogenic factors that may also be utilized within the context of the present invention include Thalidomide, (Celgene, Warren, NJ); Angiostatic steroid; AGM-1470 (H. Brem and J. Folkman *J Pediatr. Surg.* 28:445-51 (1993)); an integrin alpha v beta 3 antagonist
 20 (C. Storgard et al., *J Clin. Invest.* 103:47-54 (1999)); carboxynaminolmidazole; Carboxyamidotriazole (CAI) (National Cancer Institute, Bethesda, MD); Conbretastatin A-4 (CA4P) (OXiGENE, Boston, MA); Squalamine (Magainin Pharmaceuticals, Plymouth Meeting, PA); TNP-470, (Tap Pharmaceuticals, Deerfield, IL); ZD-0101 AstraZeneca (London, UK); APRA (CT2584); Benefin, Byrostatin-1 (SC339555); CGP-41251 (PKC 412); CM101;
 25 Dexrazoxane (ICRF187); DMXAA; Endostatin; Flavopridiol; Genestein; GTE; ImmTher; Iressa (ZD1839); Octreotide (Somatostatin); Panretin; Penacillamine; Photopoint; PI-88; Prinomastat (AG-3340) Purlytin; Suradista (FCE26644); Tamoxifen (Nolvadex); Tazarotene; Tetrathiomolybdate; Xeloda (Capecitabine); and 5-Fluorouracil.

Anti-angiogenic agents that may be administered in combination with the compounds of the
 30 invention may work through a variety of mechanisms including, but not limited to, inhibiting proteolysis of the extracellular matrix, blocking the function of endothelial cell-extracellular matrix adhesion molecules, by antagonizing the function of angiogenesis inducers such as growth factors, and inhibiting integrin receptors expressed on proliferating endothelial cells. Examples of anti-angiogenic inhibitors that interfere with extracellular matrix proteolysis and which may be
 35 administered in combination with the compositions of the invention include, but are not limited to, AG-3340 (Agouron, La Jolla, CA), BAY-12-9566 (Bayer, West Haven, CT), BMS-275291 (Bristol Myers Squibb, Princeton, NJ), CGS-27032A (Novartis, East Hanover, NJ), Marimastat

(British Biotech, Oxford, UK), and Metastat (Aeterna, St-Foy, Quebec). Examples of anti-angiogenic inhibitors that act by blocking the function of endothelial cell-extracellular matrix adhesion molecules and which may be administered in combination with the compositions of the invention include, but are not limited to, EMD-121974 (Merck KGaA Darmstadt, Germany) and
5 Vitaxin (Ixsys, La Jolla, CA/Medimmune, Gaithersburg, MD). Examples of anti-angiogenic agents that act by directly antagonizing or inhibiting angiogenesis inducers and which may be administered in combination with the compositions of the invention include, but are not limited to, Angiozyme (Ribozyme, Boulder, CO), Anti-VEGF antibody (Genentech, S. San Francisco, CA), PTK-787/ZK-225846 (Novartis, Basel, Switzerland), SU-101 (Sugen, S. San Francisco, CA), SU-
10 5416 (Sugen/ Pharmacia Upjohn, Bridgewater, NJ), and SU-6668 (Sugen). Other anti-angiogenic agents act to indirectly inhibit angiogenesis. Examples of indirect inhibitors of angiogenesis which may be administered in combination with the compositions of the invention include, but are not limited to, IM-862 (Cytran, Kirkland, WA), Interferon-alpha, IL-12 (Roche, Nutley, NJ), and Pentosan polysulfate (Georgetown University, Washington, DC).

15 In particular embodiments, the use of compositions of the invention in combination with anti-angiogenic agents is contemplated for the treatment, prevention, and/or amelioration of an autoimmune disease, such as for example, an autoimmune disease described herein.

In a particular embodiment, the use of compositions of the invention in combination with anti-angiogenic agents is contemplated for the treatment, prevention, and/or amelioration of
20 arthritis. In a more particular embodiment, the use of compositions of the invention in combination with anti-angiogenic agents is contemplated for the treatment, prevention, and/or amelioration of rheumatoid arthritis.

In another embodiment, the polynucleotides encoding a polypeptide of the present invention are administered in combination with an angiogenic protein, or polynucleotides
25 encoding an angiogenic protein. Examples of angiogenic proteins that may be administered with the compositions of the invention include, but are not limited to, acidic and basic fibroblast growth factors, VEGF-1, VEGF-2, VEGF-3, epidermal growth factor alpha and beta, platelet-derived endothelial cell growth factor, platelet-derived growth factor, tumor necrosis factor alpha, hepatocyte growth factor, insulin-like growth factor, colony stimulating factor, macrophage colony
30 stimulating factor, granulocyte/macrophage colony stimulating factor, and nitric oxide synthase.

In additional embodiments, compositions of the invention are administered in combination with a chemotherapeutic agent. Chemotherapeutic agents that may be administered with the Therapeutics of the invention include, but are not limited to alkylating agents such as nitrogen
35 Mustards (for example, Mechlorethamine, cyclophosphamide, Cyclophosphamide Ifosfamide, Melphalan (L-sarcosine), and Chlorambucil), ethylenimines and methylmelamines (for example, Hexamethylmelamine and Thiotepa), alkyl sulfonates (for example, Busulfan), nitrosoureas (for example, Carmustine (BCNU), Lomustine (CCNU), Semustine (methyl-CCNU), and Streptozocin

(streptozotocin)), triazenes (for example, Dacarbazine (DTIC; dimethyltriazenoimidazolecarboxamide)), folic acid analogs (for example, Methotrexate (amethopterin)), pyrimidine analogs (for example, Fluorouracil (5-fluorouracil; 5-FU), Floxuridine (fluorodeoxyuridine; FudR), and Cytarabine (cytosine arabinoside)), purine analogs and related
5 inhibitors (for example, Mercaptopurine (6-mercaptopurine; 6-MP), Thioguanine (6-thioguanine; TG), and Pentostatin (2'-deoxycoformycin)), vinca alkaloids (for example, Vinblastine (VLB, vinblastine sulfate) and Vincristine (vincristine sulfate)), epipodophyllotoxins (for example, Etoposide and Teniposide), antibiotics (for example, Dactinomycin (actinomycin D), Daunorubicin (daunomycin; rubidomycin), Doxorubicin, Bleomycin, Plicamycin (mithramycin),
10 and Mitomycin (mitomycin C), enzymes (for example, L-Asparaginase), biological response modifiers (for example, Interferon-alpha and interferon-alpha-2b), platinum coordination compounds (for example, Cisplatin (cis-DDP) and Carboplatin), anthracenedione (Mitoxantrone), substituted ureas (for example, Hydroxyurea), methylhydrazine derivatives (for example, Procarbazine (N-methylhydrazine; MIH), adrenocorticosteroids (for example, Prednisone),
15 progestins (for example, Hydroxyprogesterone caproate, Medroxyprogesterone, Medroxyprogesterone acetate, and Megestrol acetate), estrogens (for example, Diethylstilbestrol (DES), Diethylstilbestrol diphosphate, Estradiol, and Ethinyl estradiol), antiestrogens (for example, Tamoxifen), androgens (Testosterone propionate, and Fluoxymesterone), antiandrogens (for example, Flutamide), gonadotropin-releasing hormone analogs (for example, Leuprolide),
20 other hormones and hormone analogs (for example, methyltestosterone, estramustine, estramustine phosphate sodium, chlorotrianisene, and testolactone), and others (for example, dicarbazine, glutamic acid, and mitotane).

In one embodiment, the compositions of the invention are administered in combination with one or more of the following drugs: infliximab (also known as Remicade™ Centocor, Inc.),
25 Trocade (Roche, RO-32-3555), Leflunomide (also known as Arava™ from Hoechst Marion Roussel), Kineret™ (an IL-1 Receptor antagonist also known as Anakinra from Amgen, Inc.)

In a specific embodiment, compositions of the invention are administered in combination with CHOP (cyclophosphamide, doxorubicin, vincristine, and prednisone) or combination of one or more of the components of CHOP. In one embodiment, the compositions of the invention are
30 administered in combination with anti-CD20 antibodies, human monoclonal anti-CD20 antibodies. In another embodiment, the compositions of the invention are administered in combination with anti-CD20 antibodies and CHOP, or anti-CD20 antibodies and any combination of one or more of the components of CHOP, particularly cyclophosphamide and/or prednisone. In a specific embodiment, compositions of the invention are administered in combination with Rituximab. In a
35 further embodiment, compositions of the invention are administered with Rituximab and CHOP, or Rituximab and any combination of one or more of the components of CHOP, particularly cyclophosphamide and/or prednisone. In a specific embodiment, compositions of the invention are

administered in combination with tositumomab. In a further embodiment, compositions of the invention are administered with tositumomab and CHOP, or tositumomab and any combination of one or more of the components of CHOP, particularly cyclophosphamide and/or prednisone. The anti-CD20 antibodies may optionally be associated with radioisotopes, toxins or cytotoxic prodrugs.

In another specific embodiment, the compositions of the invention are administered in combination Zevalin™. In a further embodiment, compositions of the invention are administered with Zevalin™ and CHOP, or Zevalin™ and any combination of one or more of the components of CHOP, particularly cyclophosphamide and/or prednisone. Zevalin™ may be associated with one or more radisotopes. Particularly preferred isotopes are ⁹⁰Y and ¹¹¹In.

In an additional embodiment, the Therapeutics of the invention are administered in combination with cytokines. Cytokines that may be administered with the Therapeutics of the invention include, but are not limited to, IL2, IL3, IL4, IL5, IL6, IL7, IL10, IL12, IL13, IL15, anti-CD40, CD40L, IFN-gamma and TNF-alpha. In another embodiment, Therapeutics of the invention may be administered with any interleukin, including, but not limited to, IL-1alpha, IL-1beta, IL-2, IL-3, IL-4, IL-5, IL-6, IL-7, IL-8, IL-9, IL-10, IL-11, IL-12, IL-13, IL-14, IL-15, IL-16, IL-17, IL-18, IL-19, IL-20, and IL-21.

In one embodiment, the Therapeutics of the invention are administered in combination with members of the TNF family. TNF, TNF-related or TNF-like molecules that may be administered with the Therapeutics of the invention include, but are not limited to, soluble forms of TNF-alpha, lymphotoxin-alpha (LT-alpha, also known as TNF-beta), LT-beta (found in complex heterotrimer LT-alpha2-beta), OPGL, FasL, CD27L, CD30L, CD40L, 4-1BBL, DcR3, OX40L, TNF-gamma (International Publication No. WO 96/14328), AIM-I (International Publication No. WO 97/33899), endokine-alpha (International Publication No. WO 98/07880), OPG, and neutrokin-alpha (International Publication No. WO 98/18921, OX40, and nerve growth factor (NGF), and soluble forms of Fas, CD30, CD27, CD40 and 4-IBB, TR2 (International Publication No. WO 96/34095), DR3 (International Publication No. WO 97/33904), DR4 (International Publication No. WO 98/32856), TR5 (International Publication No. WO 98/30693), TRANK, TR9 (International Publication No. WO 98/56892), TR10 (International Publication No. WO 98/54202), 312C2 (International Publication No. WO 98/06842), and TR12, and soluble forms CD154, CD70, and CD153.

In an additional embodiment, the Therapeutics of the invention are administered in combination with angiogenic proteins. Angiogenic proteins that may be administered with the Therapeutics of the invention include, but are not limited to, Glioma Derived Growth Factor (GDGF), as disclosed in European Patent Number EP-399816; Platelet Derived Growth Factor-A (PDGF-A), as disclosed in European Patent Number EP-682110; Platelet Derived Growth Factor-

B (PDGF-B), as disclosed in European Patent Number EP-282317; Placental Growth Factor (PIGF), as disclosed in International Publication Number WO 92/06194; Placental Growth Factor-2 (PIGF-2), as disclosed in Hauser et al., Growth Factors, 4:259-268 (1993); Vascular Endothelial Growth Factor (VEGF), as disclosed in International Publication Number WO 90/13649; Vascular Endothelial Growth Factor-A (VEGF-A), as disclosed in European Patent Number EP-506477; Vascular Endothelial Growth Factor-2 (VEGF-2), as disclosed in International Publication Number WO 96/39515; Vascular Endothelial Growth Factor B (VEGF-3); Vascular Endothelial Growth Factor B-186 (VEGF-B186), as disclosed in International Publication Number WO 96/26736; Vascular Endothelial Growth Factor-D (VEGF-D), as disclosed in International Publication Number WO 98/02543; Vascular Endothelial Growth Factor-D (VEGF-D), as disclosed in International Publication Number WO 98/07832; and Vascular Endothelial Growth Factor-E (VEGF-E), as disclosed in German Patent Number DE19639601. The above mentioned references are herein incorporated by reference in their entireties.

In an additional embodiment, the Therapeutics of the invention are administered in combination with Fibroblast Growth Factors. Fibroblast Growth Factors that may be administered with the Therapeutics of the invention include, but are not limited to, FGF-1, FGF-2, FGF-3, FGF-4, FGF-5, FGF-6, FGF-7, FGF-8, FGF-9, FGF-10, FGF-11, FGF-12, FGF-13, FGF-14, and FGF-15.

In an additional embodiment, the Therapeutics of the invention are administered in combination with hematopoietic growth factors. Hematopoietic growth factors that may be administered with the Therapeutics of the invention include, but are not limited to, granulocyte macrophage colony stimulating factor (GM-CSF) (sargramostim, LEUKINE™, PROKINETE™), granulocyte colony stimulating factor (G-CSF) (filgrastim, NEUPOGEN™), macrophage colony stimulating factor (M-CSF, CSF-1) erythropoietin (epoetin alfa, EPOGEN™, PROCRIT™), stem cell factor (SCF, c-kit ligand, steel factor), megakaryocyte colony stimulating factor, PIXY321 (a GMCSF/IL-3 fusion protein), interleukins, especially any one or more of IL-1 through IL-12, interferon-gamma, or thrombopoietin.

In certain embodiments, Therapeutics of the present invention are administered in combination with adrenergic blockers, such as, for example, acebutolol, atenolol, betaxolol, bisoprolol, carteolol, labetalol, metoprolol, nadolol, oxprenolol, penbutolol, pindolol, propranolol, sotalol, and timolol.

In another embodiment, the Therapeutics of the invention are administered in combination with an antiarrhythmic drug (e.g., adenosine, amidoarone, bretylium, digitalis, digoxin, digitoxin, diltiazem, disopyramide, esmolol, flecainide, lidocaine, mexiletine, moricizine, phenytoin, procainamide, N-acetyl procainamide, propafenone, propranolol, quinidine, sotalol, tocainide, and verapamil).

In another embodiment, the Therapeutics of the invention are administered in combination with diuretic agents, such as carbonic anhydrase-inhibiting agents (e.g., acetazolamide, dichlorphenamide, and methazolamide), osmotic diuretics (e.g., glycerin, isosorbide, mannitol, and urea), diuretics that inhibit $\text{Na}^+\text{-K}^+\text{-2Cl}^-$ symport (e.g., furosemide, bumetanide, azosemide, 5 piretanide, tripamide, ethacrynic acid, muzolimine, and torsemide), thiazide and thiazide-like diuretics (e.g., bendroflumethiazide, benzthiazide, chlorothiazide, hydrochlorothiazide, hydroflumethiazide, methyclothiazide, polythiazide, trichormethiazide, chlorthalidone, indapamide, metolazone, and quinethazone), potassium sparing diuretics (e.g., amiloride and triamterene), and mineralcorticoid receptor antagonists (e.g., spironolactone, canrenone, and 10 potassium canrenoate).

In one embodiment, the Therapeutics of the invention are administered in combination with treatments for endocrine and/or hormone imbalance disorders. Treatments for endocrine and/or hormone imbalance disorders include, but are not limited to, ^{127}I , radioactive isotopes of iodine such as ^{131}I and ^{123}I ; recombinant growth hormone, such as HUMATROPE™ (recombinant 15 somatropin); growth hormone analogs such as PROTROPIN™ (somatrem); dopamine agonists such as PARLODEL™ (bromocriptine); somatostatin analogs such as SANDOSTATIN™ (octreotide); gonadotropin preparations such as PREGNYL™, A.P.L.™ and PROFASI™ (chorionic gonadotropin (CG)), PERGONAL™ (menotropins), and METRODIN™ (urofollitropin (uFSH)); synthetic human gonadotropin releasing hormone preparations such as FACTREL™ and 20 LUTREPULSE™ (gonadorelin hydrochloride); synthetic gonadotropin agonists such as LUPRON™ (leuprolide acetate), SUPPRELIN™ (histrelin acetate), SYNAREL™ (nafarelin acetate), and ZOLADEX™ (goserelin acetate); synthetic preparations of thyrotropin-releasing hormone such as RELEFACT TRH™ and THYPINONE™ (protirelin); recombinant human TSH such as THYROGEN™; synthetic preparations of the sodium salts of the natural isomers of 25 thyroid hormones such as L-T₄™, SYNTHROID™ and LEVOTHROID™ (levothyroxine sodium), L-T₃™, CYTOMEL™ and TRIOSTAT™ (liothyroine sodium), and THYROLAR™ (liotrix); antithyroid compounds such as 6-n-propylthiouracil (propylthiouracil), 1-methyl-2-mercaptoimidazole and TAPAZOLE™ (methimazole), NEO-MERCAZOLE™ (carbimazole); beta-adrenergic receptor antagonists such as propranolol and esmolol; Ca^{2+} channel blockers; 30 dexamethasone and iodinated radiological contrast agents such as TELEPAQUE™ (iopanoic acid) and ORAGRAFIN™ (sodium ipodate).

Additional treatments for endocrine and/or hormone imbalance disorders include, but are not limited to, estrogens or conjugated estrogens such as ESTRACE™ (estradiol), ESTINYL™ (ethinyl estradiol), PREMARIN™, ESTRATAB™, ORTHO-EST™, OGEN™ and estropipate 35 (estrone), ESTROVIS™ (quinestrol), ESTRADERM™ (estradiol), DELESTROGEN™ and

VALERGEN™ (estradiol valerate), DEPO-ESTRADIOL CYPIONATE™ and ESTROJECT LA™ (estradiol cypionate); antiestrogens such as NOLVADEX™ (tamoxifen), SEROPHENE™ and CLOMID™ (clomiphene); progestins such as DURALUTIN™ (hydroxyprogesterone caproate), MPA™ and DEPO-PROVERA™ (medroxyprogesterone acetate), PROVERA™ and CYCRIN™ (MPA), MEGACE™ (megestrol acetate), NORLUTIN™ (norethindrone), and NORLUTATE™ and AYGESTIN™ (norethindrone acetate); progesterone implants such as NORPLANT SYSTEM™ (subdermal implants of norgestrel); antiprogestins such as RU 486™ (mifepristone); hormonal contraceptives such as ENOVID™ (norethynodrel plus mestranol), PROGESTASERT™ (intrauterine device that releases progesterone), LOESTRIN™, BREVICON™, MODICON™, GENORA™, NELONA™, NORINYL™, OVACON-35™ and OVACON-50™ (ethinyl estradiol/norethindrone), LEVLEN™, NORDETTE™, TRI-LEVLEN™ and TRIPHASIL-21™ (ethinyl estradiol/levonorgestrel) LO/OVRAL™ and OVRAL™ (ethinyl estradiol/norgestrel), DEMULEN™ (ethinyl estradiol/ethynodiol diacetate), NORINYL™, ORTHO-NOVUM™, NORETHIN™, GENORA™, and NELOVA™ (norethindrone/mestranol), DESOGEN™ and ORTHO-CEPT™ (ethinyl estradiol/desogestrel), ORTHO-CYCLEN™ and ORTHO-TRICYCLEN™ (ethinyl estradiol/norgestimate), MICRONOR™ and NOR-QD™ (norethindrone), and OVRETTE™ (norgestrel).

Additional treatments for endocrine and/or hormone imbalance disorders include, but are not limited to, testosterone esters such as methenolone acetate and testosterone undecanoate; parenteral and oral androgens such as TESTOJECT-50™ (testosterone), TESTEX™ (testosterone propionate), DELATESTRYL™ (testosterone enanthate), DEPO-TESTOSTERONE™ (testosterone cypionate), DANOCRINE™ (danazol), HALOTESTIN™ (fluoxymesterone), ORETON METHYL™, TESTRED™ and VIRILON™ (methyltestosterone), and OXANDRIN™ (oxandrolone); testosterone transdermal systems such as TESTODERM™; androgen receptor antagonist and 5-alpha-reductase inhibitors such as ANDROCUR™ (cyproterone acetate), EULEXIN™ (flutamide), and PROSCAR™ (finasteride); adrenocorticotrophic hormone preparations such as CORTROSYN™ (cosyntropin); adrenocortical steroids and their synthetic analogs such as ACLOVATE™ (alclometasone dipropionate), CYCLOCORT™ (amcinonide), BECLOVENT™ and VANCERIL™ (beclomethasone dipropionate), CELESTONE™ (betamethasone), BENISONE™ and UTICORT™ (betamethasone benzoate), DIPROSONE™ (betamethasone dipropionate), CELESTONE PHOSPHATE™ (betamethasone sodium phosphate), CELESTONE SOLUSPAN™ (betamethasone sodium phosphate and acetate), BETA-VAL™ and VALISONE™ (betamethasone valerate), TEMOVATE™ (clobetasol propionate), CLODERM™ (clocortolone pivalate), CORTEF™ and HYDROCORTONE™ (cortisol (hydrocortisone)),

HYDROCORTONE ACETATE™ (cortisol (hydrocortisone) acetate), LOCOID™ (cortisol (hydrocortisone) butyrate), HYDROCORTONE PHOSPHATE™ (cortisol (hydrocortisone) sodium phosphate), A-HYDROCORT™ and SOLU CORTEF™ (cortisol (hydrocortisone) sodium succinate), WESTCORT™ (cortisol (hydrocortisone) valerate), CORTISONE ACETATE™ (cortisone acetate), DESOWEN™ and TRIDESILON™ (desonide), TOPICORT™ (desoximetasone), DECADRON™ (dexamethasone), DECADRON LA™ (dexamethasone acetate), DECADRON PHOSPHATE™ and HEXADROL PHOSPHATE™ (dexamethasone sodium phosphate), FLORONE™ and MAXIFLOR™ (diflorasone diacetate), FLORINEF ACETATE™ (fludrocortisone acetate), AEROBID™ and NASALIDE™ (flunisolide), FLUONID™ and SYNALAR™ (fluocinolone acetonide), LIDEX™ (fluocinonide), FLUOR-OP™ and FML™ (fluorometholone), CORDRAN™ (flurandrenolide), HALOG™ (halcinonide), HMS LIZUIFILM™ (medrysone), MEDROL™ (methylprednisolone), DEPO-MEDROL™ and MEDROL ACETATE™ (methylprednisone acetate), A-METHAPRED™ and SOLUMEDROL™ (methylprednisolone sodium succinate), ELOCON™ (mometasone furoate), HALDRONE™ (paramethasone acetate), DELTA-CORTEF™ (prednisolone), ECONOPRED™ (prednisolone acetate), HYDELTRASOL™ (prednisolone sodium phosphate), HYDELTRA-T.B.A™ (prednisolone tebutate), DELTASONE™ (prednisone), ARISTOCORT™ and KENACORT™ (triamcinolone), KENALOG™ (triamcinolone acetonide), ARISTOCORT™ and KENACORT DIACETATE™ (triamcinolone diacetate), and ARISTOSPAN™ (triamcinolone hexacetonide); inhibitors of biosynthesis and action of adrenocortical steroids such as CYTADREN™ (aminoglutethimide), NIZORAL™ (ketoconazole), MODRASTANE™ (trilostane), and METOPIRONE™ (metyrapone); bovine, porcine or human insulin or mixtures thereof; insulin analogs; recombinant human insulin such as HUMULIN™ and NOVOLIN™; oral hypoglycemic agents such as ORAMIDE™ and ORINASE™ (tolbutamide), DIABINESE™ (chlorpropamide), TOLAMIDE™ and TOLINASE™ (tolazamide), DYMELOS™ (acetohexamide), glibenclamide, MICRONASE™, DIBETA™ and GLYNASE™ (glyburide), GLUCOTROL™ (glipizide), and DIAMICRON™ (gliclazide), GLUCOPHAGE™ (metformin), ciglitazone, pioglitazone, and alpha-glucosidase inhibitors; bovine or porcine glucagon; somatostatins such as SANDOSTATIN™ (octreotide); and diazoxides such as PROGLYCEM™ (diazoxide).

In an additional embodiment, the Therapeutics of the invention are administered in combination with drugs effective in treating iron deficiency and hypochromic anemias, including but not limited to, ferrous sulfate (iron sulfate, FEOSOL™), ferrous fumarate (e.g., FEOSTAT™), ferrous gluconate (e.g., FERGON™), polysaccharide-iron complex (e.g., NIFEREX™), iron dextran injection (e.g., INFED™), cupric sulfate, pyroxidine, riboflavin, Vitamin B₁₂, cyancobalamin injection (e.g., REDISOL™, RUBRAMIN PC™), hydroxocobalamin, folic acid

(e.g., FOLVITE™), leucovorin (folinic acid, 5-CHOH4PteGlu, citrovorum factor) or WELLCOVORIN (Calcium salt of leucovorin), transferrin or ferritin.

In another embodiment, Therapeutics of the invention are administered in combination with vasodilating agents and/or calcium channel blocking agents. Vasodilating agents that may be administered with the Therapeutics of the invention include, but are not limited to, Angiotensin Converting Enzyme (ACE) inhibitors (e.g., papaverine, isoxsuprine, benazepril, captopril, cilazapril, enalapril, enalaprilat, fosinopril, lisinopril, moexipril, perindopril, quinapril, ramipril, spirapril, trandolapril, and nylidrin), and nitrates (e.g., isosorbide dinitrate, isosorbide mononitrate, and nitroglycerin). Examples of calcium channel blocking agents that may be administered in combination with the Therapeutics of the invention include, but are not limited to amlodipine, bepridil, diltiazem, felodipine, flunarizine, isradipine, nicardipine, nifedipine, nimodipine, and verapamil.

In certain embodiments, the Therapeutics of the invention are administered in combination with treatments for gastrointestinal disorders. Treatments for gastrointestinal disorders that may be administered with the Therapeutic of the invention include, but are not limited to, H₂ histamine receptor antagonists (e.g., TAGAMET™ (cimetidine), ZANTAC™ (ranitidine), PEPCID™ (famotidine), and AXID™ (nizatidine)); inhibitors of H⁺, K⁺ ATPase (e.g., PREVACID™ (lansoprazole) and PRILOSEC™ (omeprazole)); Bismuth compounds (e.g., PEPTO-BISMOL™ (bismuth subsalicylate) and DE-NOL™ (bismuth subcitrate)); various antacids; sucralfate; prostaglandin analogs (e.g., CYTOTEC™ (misoprostol)); muscarinic cholinergic antagonists; laxatives (e.g., surfactant laxatives, stimulant laxatives, saline and osmotic laxatives); antidiarrheal agents (e.g., LOMOTIL™ (diphenoxylate), MOTOFEN™ (diphenoxin), and IMODIUM™ (loperamide hydrochloride)), synthetic analogs of somatostatin such as SANDOSTATIN™ (octreotide), antiemetic agents (e.g., ZOFTRAN™ (ondansetron), KYTRIL™ (granisetron hydrochloride), tropisetron, dolasetron, metoclopramide, chlorpromazine, perphenazine, prochlorperazine, promethazine, thiethylperazine, triflupromazine, domperidone, haloperidol, droperidol, trimethobenzamide, dexamethasone, methylprednisolone, dronabinol, and nabilone); D₂ antagonists (e.g., metoclopramide, trimethobenzamide and chlorpromazine); bile salts; chenodeoxycholic acid; ursodeoxycholic acid; and pancreatic enzyme preparations such as pancreatin and pancrelipase.

In additional embodiments, the Therapeutics of the invention are administered in combination with other therapeutic or prophylactic regimens, such as, for example, radiation therapy.

Example 14: Method of Treating Decreased Levels of the Polypeptide

The present invention relates to a method for treating an individual in need of an increased level of a polypeptide of the invention in the body comprising administering to such an individual a composition comprising a therapeutically effective amount of polypeptides (including agonists thereto), and/or antibodies of the invention. Moreover, it will be appreciated that conditions caused by a decrease in the standard or normal expression level of a polypeptide of the present invention in an individual may be treated by administering agonists of said polypeptide. Thus, the invention also provides a method of treatment of an individual in need of an increased level of the polypeptide comprising administering to such an individual a Therapeutic comprising an amount of the agonist (including polypeptides and antibodies of the present invention) to increase the activity level of the polypeptide in such an individual.

For example, a patient with decreased levels of a polypeptide receives a daily dose 0.1-100 ug/kg of the agonist for six consecutive days. The exact details of the dosing scheme, based on administration and formulation, are provided in Example 13.

Example 15: Method of Treating Increased Levels of the Polypeptide

The present invention also relates to a method of treating an individual in need of a decreased level of a polypeptide of the invention in the body comprising administering to such an individual a composition comprising a therapeutically effective amount of an antagonist of the invention (including polypeptides and antibodies of the invention).

In one example, antisense technology is used to inhibit production of a polypeptide of the present invention. This technology is one example of a method of decreasing levels of a polypeptide, due to a variety of etiologies, such as cancer.

For example, a patient diagnosed with abnormally increased levels of a polypeptide is administered intravenously antisense polynucleotides at 0.5, 1.0, 1.5, 2.0 and 3.0 mg/kg day for 21 days. This treatment is repeated after a 7-day rest period if the treatment was well tolerated. The antisense polynucleotides of the present invention can be formulated using techniques and formulations described herein (e.g. see Example 13), or otherwise known in the art.

Example 16: Method of Treatment Using Gene Therapy-Ex Vivo

One method of gene therapy transplants fibroblasts, which are capable of expressing a polypeptide, onto a patient. Generally, fibroblasts are obtained from a subject by skin biopsy. The resulting tissue is placed in tissue-culture medium and separated into small pieces. Small chunks of the tissue are placed on a wet surface of a tissue culture flask, approximately ten pieces are

placed in each flask. The flask is turned upside down, closed tight and left at room temperature over night. After 24 hours at room temperature, the flask is inverted and the chunks of tissue remain fixed to the bottom of the flask and fresh media (e.g., Ham's F12 media, with 10% FBS, penicillin and streptomycin) is added. The flasks are then incubated at 37 degree C for
5 approximately one week.

At this time, fresh media is added and subsequently changed every several days. After an additional two weeks in culture, a monolayer of fibroblasts emerge. The monolayer is trypsinized and scaled into larger flasks.

pMV-7 (Kirschmeier, P.T. et al., DNA, 7:219-25 (1988)), flanked by the long terminal
10 repeats of the Moloney murine sarcoma virus, is digested with EcoRI and HindIII and subsequently treated with calf intestinal phosphatase. The linear vector is fractionated on agarose gel and purified, using glass beads.

The cDNA encoding a polypeptide of the present invention can be amplified using PCR primers which correspond to the 5' and 3' end sequences respectively as set forth in Example 1
15 using primers and having appropriate restriction sites and initiation/stop codons, if necessary. Preferably, the 5' primer contains an EcoRI site and the 3' primer includes a HindIII site. Equal quantities of the Moloney murine sarcoma virus linear backbone and the amplified EcoRI and HindIII fragment are added together, in the presence of T4 DNA ligase. The resulting mixture is maintained under conditions appropriate for ligation of the two fragments. The ligation mixture is
20 then used to transform bacteria HB101, which are then plated onto agar containing kanamycin for the purpose of confirming that the vector has the gene of interest properly inserted.

The amphotropic pA317 or GP+am12 packaging cells are grown in tissue culture to confluent density in Dulbecco's Modified Eagles Medium (DMEM) with 10% calf serum (CS), penicillin and streptomycin. The MSV vector containing the gene is then added to the media and
25 the packaging cells transduced with the vector. The packaging cells now produce infectious viral particles containing the gene (the packaging cells are now referred to as producer cells).

Fresh media is added to the transduced producer cells, and subsequently, the media is harvested from a 10 cm plate of confluent producer cells. The spent media, containing the infectious viral particles, is filtered through a millipore filter to remove detached producer cells
30 and this media is then used to infect fibroblast cells. Media is removed from a sub-confluent plate of fibroblasts and quickly replaced with the media from the producer cells. This media is removed and replaced with fresh media. If the titer of virus is high, then virtually all fibroblasts will be infected and no selection is required. If the titer is very low, then it is necessary to use a retroviral vector that has a selectable marker, such as neo or his. Once the fibroblasts have been efficiently
35 infected, the fibroblasts are analyzed to determine whether protein is produced.

The engineered fibroblasts are then transplanted onto the host, either alone or after having been grown to confluence on cytodex 3 microcarrier beads.

***Example 17: Gene Therapy Using Endogenous Genes Corresponding To
Polynucleotides of the Invention***

5 Another method of gene therapy according to the present invention involves operably associating the endogenous polynucleotide sequence of the invention with a promoter via homologous recombination as described, for example, in U.S. Patent NO: 5,641,670, issued June 24, 1997; International Publication NO: WO 96/29411, published September 26, 1996; International Publication NO: WO 94/12650, published August 4, 1994; Koller et al., *Proc. Natl.*
10 *Acad. Sci. USA*, 86:8932-8935 (1989); and Zijlstra et al., *Nature*, 342:435-438 (1989). This method involves the activation of a gene which is present in the target cells, but which is not expressed in the cells, or is expressed at a lower level than desired.

Polynucleotide constructs are made which contain a promoter and targeting sequences, which are homologous to the 5' non-coding sequence of endogenous polynucleotide sequence,
15 flanking the promoter. The targeting sequence will be sufficiently near the 5' end of the polynucleotide sequence so the promoter will be operably linked to the endogenous sequence upon homologous recombination. The promoter and the targeting sequences can be amplified using PCR. Preferably, the amplified promoter contains distinct restriction enzyme sites on the 5' and 3' ends. Preferably, the 3' end of the first targeting sequence contains the same restriction enzyme
20 site as the 5' end of the amplified promoter and the 5' end of the second targeting sequence contains the same restriction site as the 3' end of the amplified promoter.

The amplified promoter and the amplified targeting sequences are digested with the appropriate restriction enzymes and subsequently treated with calf intestinal phosphatase. The digested promoter and digested targeting sequences are added together in the presence of T4 DNA
25 ligase. The resulting mixture is maintained under conditions appropriate for ligation of the two fragments. The construct is size fractionated on an agarose gel, then purified by phenol extraction and ethanol precipitation.

In this Example, the polynucleotide constructs are administered as naked polynucleotides via electroporation. However, the polynucleotide constructs may also be administered with
30 transfection-facilitating agents, such as liposomes, viral sequences, viral particles, precipitating agents, etc. Such methods of delivery are known in the art.

Once the cells are transfected, homologous recombination will take place which results in the promoter being operably linked to the endogenous polynucleotide sequence. This results in the expression of polynucleotide corresponding to the polynucleotide in the cell. Expression may be
35 detected by immunological staining, or any other method known in the art.

Fibroblasts are obtained from a subject by skin biopsy. The resulting tissue is placed in DMEM + 10% fetal calf serum. Exponentially growing or early stationary phase fibroblasts are

trypsinized and rinsed from the plastic surface with nutrient medium. An aliquot of the cell suspension is removed for counting, and the remaining cells are subjected to centrifugation. The supernatant is aspirated and the pellet is resuspended in 5 ml of electroporation buffer (20 mM HEPES pH 7.3, 137 mM NaCl, 5 mM KCl, 0.7 mM Na₂ HPO₄, 6 mM dextrose). The cells are
5 recentrifuged, the supernatant aspirated, and the cells resuspended in electroporation buffer containing 1 mg/ml acetylated bovine serum albumin. The final cell suspension contains approximately 3×10^6 cells/ml. Electroporation should be performed immediately following resuspension.

Plasmid DNA is prepared according to standard techniques. For example, to construct a
10 plasmid for targeting to the locus corresponding to the polynucleotide of the invention, plasmid pUC18 (MBI Fermentas, Amherst, NY) is digested with HindIII. The CMV promoter is amplified by PCR with an XbaI site on the 5' end and a BamHI site on the 3' end. Two non-coding sequences are amplified via PCR: one non-coding sequence (fragment 1) is amplified with a HindIII site at the 5' end and an Xba site at the 3' end; the other non-coding sequence (fragment 2)
15 is amplified with a BamHI site at the 5' end and a HindIII site at the 3' end. The CMV promoter and the fragments (1 and 2) are digested with the appropriate enzymes (CMV promoter - XbaI and BamHI; fragment 1 - XbaI; fragment 2 - BamHI) and ligated together. The resulting ligation product is digested with HindIII, and ligated with the HindIII-digested pUC18 plasmid.

Plasmid DNA is added to a sterile cuvette with a 0.4 cm electrode gap (Bio-Rad). The
20 final DNA concentration is generally at least 120 μ g/ml. 0.5 ml of the cell suspension (containing approximately 1.5×10^6 cells) is then added to the cuvette, and the cell suspension and DNA solutions are gently mixed. Electroporation is performed with a Gene-Pulser apparatus (Bio-Rad). Capacitance and voltage are set at 960 μ F and 250-300 V, respectively. As voltage increases, cell survival decreases, but the percentage of surviving cells that stably incorporate the introduced
25 DNA into their genome increases dramatically. Given these parameters, a pulse time of approximately 14-20 mSec should be observed.

Electroporated cells are maintained at room temperature for approximately 5 min, and the contents of the cuvette are then gently removed with a sterile transfer pipette. The cells are added directly to 10 ml of prewarmed nutrient media (DMEM with 15% calf serum) in a 10 cm dish and
30 incubated at 37 degree C. The following day, the media is aspirated and replaced with 10 ml of fresh media and incubated for a further 16-24 hours.

The engineered fibroblasts are then injected into the host, either alone or after having been grown to confluence on cytodex 3 microcarrier beads. The fibroblasts now produce the protein product. The fibroblasts can then be introduced into a patient as described above.

Example 18: Method of Treatment Using Gene Therapy - In Vivo

Another aspect of the present invention is using *in vivo* gene therapy methods to prevent, treat, and/or ameliorate gastrointestinal diseases and disorders. The gene therapy method relates to the introduction of naked nucleic acid (DNA, RNA, and antisense DNA or RNA) sequences into an animal to increase or decrease the expression of the polypeptide. The polynucleotide of the present invention may be operatively linked to (i.e., associated with) a promoter or any other genetic elements necessary for the expression of the polypeptide by the target tissue. Such gene therapy and delivery techniques and methods are known in the art, see, for example, WO90/11092, WO98/11779; U.S. Patent NO. 5693622, 5705151, 5580859; Tabata et al., Cardiovasc. Res. 35(3):470-479 (1997); Chao et al., Pharmacol. Res. 35(6):517-522 (1997); Wolff, Neuromuscul. Disord. 7(5):314-318 (1997); Schwartz et al., Gene Ther. 3(5):405-411 (1996); Tsurumi et al., Circulation 94(12):3281-3290 (1996) (incorporated herein by reference).

The polynucleotide constructs may be delivered by any method that delivers injectable materials to the cells of an animal, such as, injection into the interstitial space of tissues (heart, muscle, skin, lung, liver, intestine and the like). The polynucleotide constructs can be delivered in a pharmaceutically acceptable liquid or aqueous carrier.

The term "naked" polynucleotide, DNA or RNA, refers to sequences that are free from any delivery vehicle that acts to assist, promote, or facilitate entry into the cell, including viral sequences, viral particles, liposome formulations, lipofectin or precipitating agents and the like. However, the polynucleotides of the present invention may also be delivered in liposome formulations (such as those taught in Felgner P.L. et al. (1995) Ann. NY Acad. Sci. 772:126-139 and Abdallah B. et al. (1995) Biol. Cell 85(1):1-7) which can be prepared by methods well known to those skilled in the art.

The polynucleotide vector constructs used in the gene therapy method are preferably constructs that will not integrate into the host genome nor will they contain sequences that allow for replication. Any strong promoter known to those skilled in the art can be used for driving the expression of DNA. Unlike other gene therapy techniques, one major advantage of introducing naked nucleic acid sequences into target cells is the transitory nature of the polynucleotide synthesis in the cells. Studies have shown that non-replicating DNA sequences can be introduced into cells to provide production of the desired polypeptide for periods of up to six months.

The polynucleotide construct can be delivered to the interstitial space of tissues within an animal, including muscle, skin, brain, lung, liver, spleen, bone marrow, thymus, heart, lymph, blood, bone, cartilage, pancreas, kidney, gall bladder, stomach, intestine, testis, ovary, uterus, rectum, nervous system, eye, gland, and connective tissue. Interstitial space of the tissues comprises the intercellular fluid, mucopolysaccharide matrix among the reticular fibers of organ tissues, elastic fibers in the walls of vessels or chambers, collagen fibers of fibrous tissues, or that same matrix within connective tissue ensheathing muscle cells or in the lacunae of bone. It is similarly the space occupied by the plasma of the circulation and the lymph fluid of the lymphatic

channels. Delivery to the interstitial space of muscle tissue is preferred for the reasons discussed below. They may be conveniently delivered by injection into the tissues comprising these cells. They are preferably delivered to and expressed in persistent, non-dividing cells which are differentiated, although delivery and expression may be achieved in non-differentiated or less completely differentiated cells, such as, for example, stem cells of blood or skin fibroblasts. *In vivo* muscle cells are particularly competent in their ability to take up and express polynucleotides.

For the naked polynucleotide injection, an effective dosage amount of DNA or RNA will be in the range of from about 0.05 g/kg body weight to about 50 mg/kg body weight. Preferably the dosage will be from about 0.005 mg/kg to about 20 mg/kg and more preferably from about 0.05 mg/kg to about 5 mg/kg. Of course, as the artisan of ordinary skill will appreciate, this dosage will vary according to the tissue site of injection. The appropriate and effective dosage of nucleic acid sequence can readily be determined by those of ordinary skill in the art and may depend on the condition being treated and the route of administration. The preferred route of administration is by the parenteral route of injection into the interstitial space of tissues. However, other parenteral routes may also be used, such as, inhalation of an aerosol formulation particularly for delivery to lungs or bronchial tissues, throat or mucous membranes of the nose. In addition, naked polynucleotide constructs can be delivered to arteries during angioplasty by the catheter used in the procedure.

The dose response effects of injected polynucleotide in muscle *in vivo* is determined as follows. Suitable template DNA for production of mRNA coding for polypeptide of the present invention is prepared in accordance with a standard recombinant DNA methodology. The template DNA, which may be either circular or linear, is either used as naked DNA or complexed with liposomes. The quadriceps muscles of mice are then injected with various amounts of the template DNA.

Five to six week old female and male Balb/C mice are anesthetized by intraperitoneal injection with 0.3 ml of 2.5% Avertin. A 1.5 cm incision is made on the anterior thigh, and the quadriceps muscle is directly visualized. The template DNA is injected in 0.1 ml of carrier in a 1 cc syringe through a 27 gauge needle over one minute, approximately 0.5 cm from the distal insertion site of the muscle into the knee and about 0.2 cm deep. A suture is placed over the injection site for future localization, and the skin is closed with stainless steel clips.

After an appropriate incubation time (e.g., 7 days) muscle extracts are prepared by excising the entire quadriceps. Every fifth 15 μ m cross-section of the individual quadriceps muscles is histochemically stained for protein expression. A time course for protein expression may be done in a similar fashion except that quadriceps from different mice are harvested at different times. Persistence of DNA in muscle following injection may be determined by Southern blot analysis after preparing total cellular DNA and HIRT supernatants from injected and control mice. The results of the above experimentation in mice can be used to extrapolate proper dosages

and other treatment parameters in humans and other animals using naked DNA.

Example 19: Transgenic Animals

5 The polypeptides of the invention can also be expressed in transgenic animals. Animals of any species, including, but not limited to, mice, rats, rabbits, hamsters, guinea pigs, pigs, micro-pigs, goats, sheep, cows and non-human primates, *e.g.*, baboons, monkeys, and chimpanzees may be used to generate transgenic animals. In a specific embodiment, techniques described herein or otherwise known in the art, are used to express polypeptides of the invention in humans, as part of
10 a gene therapy protocol.

Any technique known in the art may be used to introduce the transgene (*i.e.*, polynucleotides of the invention) into animals to produce the founder lines of transgenic animals. Such techniques include, but are not limited to, pronuclear microinjection (Paterson et al., Appl. Microbiol. Biotechnol. 40:691-698 (1994); Carver et al., Biotechnology (NY) 11:1263-1270
15 (1993); Wright et al., Biotechnology (NY) 9:830-834 (1991); and Hoppe et al., U.S. Pat. No. 4,873,191 (1989)); retrovirus mediated gene transfer into germ lines (Van der Putten et al., Proc. Natl. Acad. Sci., USA 82:6148-6152 (1985)), blastocysts or embryos; gene targeting in embryonic stem cells (Thompson et al., Cell 56:313-321 (1989)); electroporation of cells or embryos (Lo, 1983, Mol Cell. Biol. 3:1803-1814 (1983)); introduction of the polynucleotides of the invention
20 using a gene gun (*see, e.g.*, Ulmer et al., Science 259:1745 (1993); introducing nucleic acid constructs into embryonic pluripotent stem cells and transferring the stem cells back into the blastocyst; and sperm-mediated gene transfer (Lavitrano et al., Cell 57:717-723 (1989); etc. For a review of such techniques, *see* Gordon, "Transgenic Animals," Intl. Rev. Cytol. 115:171-229 (1989), which is incorporated by reference herein in its entirety.

25 Any technique known in the art may be used to produce transgenic clones containing polynucleotides of the invention, for example, nuclear transfer into enucleated oocytes of nuclei from cultured embryonic, fetal, or adult cells induced to quiescence (Campell et al., Nature 380:64-66 (1996); Wilmut et al., Nature 385:810-813 (1997)).

The present invention provides for transgenic animals that carry the transgene in all their
30 cells, as well as animals which carry the transgene in some, but not all their cells, *i.e.*, mosaic animals or chimeric. The transgene may be integrated as a single transgene or as multiple copies such as in concatamers, *e.g.*, head-to-head tandems or head-to-tail tandems. The transgene may also be selectively introduced into and activated in a particular cell type by following, for example, the teaching of Lasko et al. (Lasko et al., Proc. Natl. Acad. Sci. USA 89:6232-6236 (1992)). The
35 regulatory sequences required for such a cell-type specific activation will depend upon the particular cell type of interest, and will be apparent to those of skill in the art. When it is desired that the polynucleotide transgene be integrated into the chromosomal site of the endogenous gene,

gene targeting is preferred. Briefly, when such a technique is to be utilized, vectors containing some nucleotide sequences homologous to the endogenous gene are designed for the purpose of integrating, via homologous recombination with chromosomal sequences, into and disrupting the function of the nucleotide sequence of the endogenous gene. The transgene may also be
5 selectively introduced into a particular cell type, thus inactivating the endogenous gene in only that cell type, by following, for example, the teaching of Gu et al. (Gu et al., Science 265:103-106 (1994)). The regulatory sequences required for such a cell-type specific inactivation will depend upon the particular cell type of interest, and will be apparent to those of skill in the art.

Once transgenic animals have been generated, the expression of the recombinant gene
10 may be assayed utilizing standard techniques. Initial screening may be accomplished by Southern blot analysis or PCR techniques to analyze animal tissues to verify that integration of the transgene has taken place. The level of mRNA expression of the transgene in the tissues of the transgenic animals may also be assessed using techniques which include, but are not limited to, Northern blot analysis of tissue samples obtained from the animal, *in situ* hybridization analysis, and reverse
15 transcriptase-PCR (rt-PCR). Samples of transgenic gene-expressing tissue may also be evaluated immunocytochemically or immunohistochemically using antibodies specific for the transgene product.

Once the founder animals are produced, they may be bred, inbred, outbred, or crossbred to produce colonies of the particular animal. Examples of such breeding strategies include, but are
20 not limited to: outbreeding of founder animals with more than one integration site in order to establish separate lines; inbreeding of separate lines in order to produce compound transgenics that express the transgene at higher levels because of the effects of additive expression of each transgene; crossing of heterozygous transgenic animals to produce animals homozygous for a given integration site in order to both augment expression and eliminate the need for screening of
25 animals by DNA analysis; crossing of separate homozygous lines to produce compound heterozygous or homozygous lines; and breeding to place the transgene on a distinct background that is appropriate for an experimental model of interest.

Transgenic animals of the invention have uses which include, but are not limited to, animal model systems useful in elaborating the biological function of polypeptides of the present
30 invention, studying conditions and/or disorders associated with aberrant expression, and in screening for compounds effective in ameliorating such conditions and/or disorders.

Example 20: Knock-Out Animals

35 Endogenous gene expression can also be reduced by inactivating or "knocking out" the gene and/or its promoter using targeted homologous recombination. (e.g., see Smithies et al., Nature 317:230-234 (1985); Thomas & Capecchi, Cell 51:503-512 (1987); Thompson et al., Cell

5:313-321 (1989); each of which is incorporated by reference herein in its entirety). For example, a mutant, non-functional polynucleotide of the invention (or a completely unrelated DNA sequence) flanked by DNA homologous to the endogenous polynucleotide sequence (either the coding regions or regulatory regions of the gene) can be used, with or without a selectable marker and/or a negative selectable marker, to transfect cells that express polypeptides of the invention *in vivo*. In another embodiment, techniques known in the art are used to generate knockouts in cells that contain, but do not express the gene of interest. Insertion of the DNA construct, via targeted homologous recombination, results in inactivation of the targeted gene. Such approaches are particularly suited in research and agricultural fields where modifications to embryonic stem cells can be used to generate animal offspring with an inactive targeted gene (e.g., see Thomas & Capecchi 1987 and Thompson 1989, *supra*). However this approach can be routinely adapted for use in humans provided the recombinant DNA constructs are directly administered or targeted to the required site *in vivo* using appropriate viral vectors that will be apparent to those of skill in the art.

15 In further embodiments of the invention, cells that are genetically engineered to express the polypeptides of the invention, or alternatively, that are genetically engineered not to express the polypeptides of the invention (e.g., knockouts) are administered to a patient *in vivo*. Such cells may be obtained from the patient (i.e., animal, including human) or an MHC compatible donor and can include, but are not limited to fibroblasts, bone marrow cells, blood cells (e.g., lymphocytes), adipocytes, muscle cells, endothelial cells etc. The cells are genetically engineered *in vitro* using recombinant DNA techniques to introduce the coding sequence of polypeptides of the invention into the cells, or alternatively, to disrupt the coding sequence and/or endogenous regulatory sequence associated with the polypeptides of the invention, e.g., by transduction (using viral vectors, and preferably vectors that integrate the transgene into the cell genome) or transfection procedures, including, but not limited to, the use of plasmids, cosmids, YACs, naked DNA, electroporation, liposomes, etc. The coding sequence of the polypeptides of the invention can be placed under the control of a strong constitutive or inducible promoter or promoter/enhancer to achieve expression, and preferably secretion, of the polypeptides of the invention. The engineered cells which express and preferably secrete the polypeptides of the invention can be introduced into the patient systemically, e.g., in the circulation, or intraperitoneally.

30 Alternatively, the cells can be incorporated into a matrix and implanted in the body, e.g., genetically engineered fibroblasts can be implanted as part of a skin graft; genetically engineered endothelial cells can be implanted as part of a lymphatic or vascular graft. (See, for example, Anderson et al. U.S. Patent No. 5,399,349; and Mulligan & Wilson, U.S. Patent No. 5,460,959 each of which is incorporated by reference herein in its entirety).

35 When the cells to be administered are non-autologous or non-MHC compatible cells, they can be administered using well known techniques which prevent the development of a host

immune response against the introduced cells. For example, the cells may be introduced in an encapsulated form which, while allowing for an exchange of components with the immediate extracellular environment, does not allow the introduced cells to be recognized by the host immune system.

5 Transgenic and "knock-out" animals of the invention have uses which include, but are not limited to, animal model systems useful in elaborating the biological function of polypeptides of the present invention, studying conditions and/or disorders associated with aberrant expression, and in screening for compounds effective in ameliorating such conditions and/or disorders.

10 ***Example 21: Production Of Polypeptide of the Invention For High-Throughput Screening Assays***

The following protocol produces a supernatant containing polypeptide of the present invention to be tested. This supernatant can then be used in the Screening Assays described in
15 Examples 32-41.

First, dilute Poly-D-Lysine (644 587 Boehringer-Mannheim) stock solution (1mg/ml in PBS) 1:20 in PBS (w/o calcium or magnesium 17-516F Biowhittaker) for a working solution of 50ug/ml. Add 200 ul of this solution to each well (24 well plates) and incubate at RT for 20 minutes. Be sure to distribute the solution over each well (note: a 12-channel pipetter may be used
20 with tips on every other channel). Aspirate off the Poly-D-Lysine solution and rinse with 1ml PBS (Phosphate Buffered Saline). The PBS should remain in the well until just prior to plating the cells and plates may be poly-lysine coated in advance for up to two weeks.

Plate 293T cells (do not carry cells past P+20) at 2×10^5 cells/well in .5ml DMEM(Dulbecco's Modified Eagle Medium)(with 4.5 G/L glucose and L-glutamine (12-604F Biowhittaker))/10% heat inactivated FBS(14-503F Biowhittaker)/1x Penstrep(17-602E Biowhittaker). Let the cells grow overnight.

The next day, mix together in a sterile solution basin: 300 ul Lipofectamine (18324-012 Gibco/BRL) and 5ml Optimem I (31985070 Gibco/BRL)/96-well plate. With a small volume multi-channel pipetter, aliquot approximately 2ug of an expression vector containing a polynucleotide insert, produced by the methods described in Examples 8-10, into an appropriately
30 labeled 96-well round bottom plate. With a multi-channel pipetter, add 50ul of the Lipofectamine/Optimem I mixture to each well. Pipette up and down gently to mix. Incubate at RT 15-45 minutes. After about 20 minutes, use a multi-channel pipetter to add 150ul Optimem I to each well. As a control, one plate of vector DNA lacking an insert should be transfected with
35 each set of transfections.

Preferably, the transfection should be performed by tag-teaming the following tasks. By tag-teaming, hands on time is cut in half, and the cells do not spend too much time on PBS. First,

person A aspirates off the media from four 24-well plates of cells, and then person B rinses each well with .5-1ml PBS. Person A then aspirates off PBS rinse, and person B, using a 12-channel pipetter with tips on every other channel, adds the 200ul of DNA/Lipofectamine/Optimem I complex to the odd wells first, then to the even wells, to each row on the 24-well plates. Incubate
 5 at 37 degree C for 6 hours.

While cells are incubating, prepare appropriate media, either 1%BSA in DMEM with 1x penstrep, or HGS CHO-5 media (116.6 mg/L of CaCl₂ (anhyd); 0.00130 mg/L CuSO₄·5H₂O; 0.050 mg/L of Fe(NO₃)₃·9H₂O; 0.417 mg/L of FeSO₄·7H₂O; 311.80 mg/L of KCl; 28.64 mg/L of MgCl₂; 48.84 mg/L of MgSO₄; 6995.50 mg/L of NaCl; 2400.0 mg/L of NaHCO₃; 62.50 mg/L
 10 of NaH₂PO₄·H₂O; 71.02 mg/L of Na₂HPO₄; .4320 mg/L of ZnSO₄·7H₂O; .002 mg/L of Arachidonic Acid ; 1.022 mg/L of Cholesterol; .070 mg/L of DL-alpha-Tocopherol-Acetate; 0.0520 mg/L of Linoleic Acid; 0.010 mg/L of Linolenic Acid; 0.010 mg/L of Myristic Acid; 0.010 mg/L of Oleic Acid; 0.010 mg/L of Palmitic Acid; 0.010 mg/L of Palmitic Acid; 100 mg/L of Pluronic F-68; 0.010 mg/L of Stearic Acid; 2.20 mg/L of Tween 80; 4551 mg/L of D-Glucose;
 15 130.85 mg/ml of L- Alanine; 147.50 mg/ml of L-Arginine-HCL; 7.50 mg/ml of L-Asparagine-H₂O; 6.65 mg/ml of L-Aspartic Acid; 29.56 mg/ml of L-Cystine-2HCL-H₂O; 31.29 mg/ml of L-Cystine-2HCL; 7.35 mg/ml of L-Glutamic Acid; 365.0 mg/ml of L-Glutamine; 18.75 mg/ml of Glycine; 52.48 mg/ml of L-Histidine-HCL-H₂O; 106.97 mg/ml of L-Isoleucine; 111.45 mg/ml of L-Leucine; 163.75 mg/ml of L-Lysine HCL; 32.34 mg/ml of L-Methionine; 68.48 mg/ml of L-
 20 Phenylalanine; 40.0 mg/ml of L-Proline; 26.25 mg/ml of L-Serine; 101.05 mg/ml of L-Threonine; 19.22 mg/ml of L-Tryptophan; 91.79 mg/ml of L-Tyrosine-2Na-2H₂O; and 99.65 mg/ml of L-Valine; 0.0035 mg/L of Biotin; 3.24 mg/L of D-Ca Pantothenate; 11.78 mg/L of Choline Chloride; 4.65 mg/L of Folic Acid; 15.60 mg/L of i-Inositol; 3.02 mg/L of Niacinamide; 3.00 mg/L of Pyridoxal HCL; 0.031 mg/L of Pyridoxine HCL; 0.319 mg/L of Riboflavin; 3.17 mg/L of
 25 Thiamine HCL; 0.365 mg/L of Thymidine; 0.680 mg/L of Vitamin B₁₂; 25 mM of HEPES Buffer; 2.39 mg/L of Na Hypoxanthine; 0.105 mg/L of Lipoic Acid; 0.081 mg/L of Sodium Putrescine-2HCL; 55.0 mg/L of Sodium Pyruvate; 0.0067 mg/L of Sodium Selenite; 20uM of Ethanolamine; 0.122 mg/L of Ferric Citrate; 41.70 mg/L of Methyl-B-Cyclodextrin complexed with Linoleic Acid; 33.33 mg/L of Methyl-B-Cyclodextrin complexed with Oleic Acid; 10 mg/L
 30 of Methyl-B-Cyclodextrin complexed with Retinal Acetate. Adjust osmolarity to 327 mOsm) with 2mm glutamine and 1x penstrep. (BSA (81-068-3 Bayer) 100gm dissolved in 1L DMEM for a 10% BSA stock solution). Filter the media and collect 50 ul for endotoxin assay in 15ml polystyrene conical.

The transfection reaction is terminated, preferably by tag-teaming, at the end of the
 35 incubation period. Person A aspirates off the transfection media, while person B adds 1.5ml

appropriate media to each well. Incubate at 37 degree C for 45 or 72 hours depending on the media used: 1%BSA for 45 hours or CHO-5 for 72 hours.

On day four, using a 300ul multichannel pipetter, aliquot 600ul in one 1ml deep well plate and the remaining supernatant into a 2ml deep well. The supernatants from each well can then be
5 used in the assays described in Examples 32-39.

It is specifically understood that when activity is obtained in any of the assays described below using a supernatant, the activity originates from either the polypeptide of the present invention directly (e.g., as a secreted protein) or by polypeptide of the present invention inducing expression of other proteins, which are then secreted into the supernatant. Thus, the invention
10 further provides a method of identifying the protein in the supernatant characterized by an activity in a particular assay.

Example 22: Construction of GAS Reporter Construct

15 One signal transduction pathway involved in the differentiation and proliferation of cells is called the Jaks-STATs pathway. Activated proteins in the Jaks-STATs pathway bind to gamma activation site "GAS" elements or interferon-sensitive responsive element ("ISRE"), located in the promoter of many genes. The binding of a protein to these elements alter the expression of the associated gene.

20 GAS and ISRE elements are recognized by a class of transcription factors called Signal Transducers and Activators of Transcription, or "STATs." There are six members of the STATs family. Stat1 and Stat3 are present in many cell types, as is Stat2 (as response to IFN-alpha is widespread). Stat4 is more restricted and is not in many cell types though it has been found in T helper class I, cells after treatment with IL-12. Stat5 was originally called mammary growth
25 factor, but has been found at higher concentrations in other cells including myeloid cells. It can be activated in tissue culture cells by many cytokines.

The STATs are activated to translocate from the cytoplasm to the nucleus upon tyrosine phosphorylation by a set of kinases known as the Janus Kinase ("Jaks") family. Jaks represent a distinct family of soluble tyrosine kinases and include Tyk2, Jak1, Jak2, and Jak3. These kinases
30 display significant sequence similarity and are generally catalytically inactive in resting cells.

The Jaks are activated by a wide range of receptors summarized in the Table below. (Adapted from review by Schidler and Darnell, Ann. Rev. Biochem. 64:621-51 (1995)). A cytokine receptor family, capable of activating Jaks, is divided into two groups: (a) Class 1 includes receptors for IL-2, IL-3, IL-4, IL-6, IL-7, IL-9, IL-11, IL-12, IL-15, Epo, PRL, GH, G-
35 CSF, GM-CSF, LIF, CNTF, and thrombopoietin; and (b) Class 2 includes IFN-a, IFN-g, and IL-10. The Class 1 receptors share a conserved cysteine motif (a set of four conserved cysteines and

one tryptophan) and a WSXWS motif (a membrane proximal region encoding Trp-Ser-Xaa-Trp-Ser (SEQ ID NO: 2)).

Thus, on binding of a ligand to a receptor, Jaks are activated, which in turn activate STATs, which then translocate and bind to GAS elements. This entire process is encompassed in
5 the Jaks-STATs signal transduction pathway. Therefore, activation of the Jaks-STATs pathway, reflected by the binding of the GAS or the ISRE element, can be used to indicate proteins involved in the proliferation and differentiation of cells. For example, growth factors and cytokines are known to activate the Jaks-STATs pathway (See Table below). Thus, by using GAS elements linked to reporter molecules, activators of the Jaks-STATs pathway can be identified.

10

	<u>Ligand</u>	<u>tyk2</u>	<u>JAKs</u> <u>Jak1</u>	<u>Jak2</u>	<u>Jak3</u>	<u>STATS</u> <u>GAS(elements)</u> or <u>ISRE</u>
	<u>IFN family</u>					
5	IFN-a/B	+	+	-	-	1,2,3 ISRE
	IFN-g		+	+	-	1 GAS (IRF1>Lys6>IFP)
	Il-10	+	?	?	-	1,3
	<u>gp130 family</u>					
10	IL-6 (Pleiotropic)	+	+	+	?	1,3 GAS (IRF1>Lys6>IFP)
	Il-11(Pleiotropic)	?	+	?	?	1,3
	OnM(Pleiotropic)	?	+	+	?	1,3
	LIF(Pleiotropic)	?	+	+	?	1,3
	CNTF(Pleiotropic)	-/+	+	+	?	1,3
15	G-CSF(Pleiotropic)	?	+	?	?	1,3
	IL-12(Pleiotropic)	+	-	+	+	1,3
	<u>g-C family</u>					
20	IL-2 (lymphocytes)	-	+	-	+	1,3,5 GAS
	IL-4 (lymph/myeloid)	-	+	-	+	6 GAS (IRF1 = IFP
	>>Ly6)(IgH)					
	IL-7 (lymphocytes)	-	+	-	+	5 GAS
	IL-9 (lymphocytes)	-	+	-	+	5 GAS
	IL-13 (lymphocyte)	-	+	?	?	6 GAS
25	IL-15	?	+	?	+	5 GAS
	<u>gp140 family</u>					
	IL-3 (myeloid)	-	-	+	-	5 GAS
	(IRF1>IFP>>Ly6)					
30	IL-5 (myeloid)	-	-	+	-	5 GAS
	GM-CSF (myeloid)	-	-	+	-	5 GAS
	<u>Growth hormone family</u>					
	GH	?	-	+	-	5
35	PRL	?	+/-	+	-	1,3,5
	EPO	?	-	+	-	5 GAS(B-
	CAS>IRF1=IFP>>Ly6)					
	<u>Receptor Tyrosine Kinases</u>					
40	EGF	?	+	+	-	1,3 GAS (IRF1)
	PDGF	?	+	+	-	1,3
	CSF-1	?	+	+	-	1,3 GAS (not IRF1)

To construct a synthetic GAS containing promoter element, which is used in the Biological Assays described in Examples 32-33, a PCR based strategy is employed to generate a GAS-SV40 promoter sequence. The 5' primer contains four tandem copies of the GAS binding site found in the IRF1 promoter and previously demonstrated to bind STATs upon induction with a range of cytokines (Rothman et al., Immunity 1:457-468 (1994).), although other GAS or ISRE elements can be used instead. The 5' primer also contains 18bp of sequence complementary to the SV40 early promoter sequence and is flanked with an XhoI site. The sequence of the 5' primer is:

5':GCGCCTCGAGATTTCCCGAAATCTAGATTTCCCGAAATGATTTCCCGAAATGATTTCCCGAAATATCTGCCATCTCAATTAG:3' (SEQ ID NO: 3)

The downstream primer is complementary to the SV40 promoter and is flanked with a Hind III site: 5':GCGGCAAGCTTTTTGCAAAGCCTAGGC:3' (SEQ ID NO: 4)

PCR amplification is performed using the SV40 promoter template present in the B-gal:promoter plasmid obtained from Clontech. The resulting PCR fragment is digested with XhoI/Hind III and subcloned into BLSK2-. (Stratagene.) Sequencing with forward and reverse primers confirms that the insert contains the following sequence:

5':CTCGAGATTTCCCGAAATCTAGATTTCCCGAAATGATTTCCCGAAATGATTTCCCGAAATATCTGCCATCTCAATTAGTCAGCAACCATAGTCCCGCCCCTAACTCCGCCATCCCGCCCCTAACTCCGCCCAGTTCCGCCATTCTCCGCCCCATGGCTGACTAA
TTTTTTTTTATTTATGCAGAGGCCGAGGCCGCCTCGGCCTCTGAGCTATTCCAGAAGTAG
TGAGGAGGCTTTTTTGGAGGCCTAGGCTTTTGCAAAAAGCCTT:3' (SEQ ID NO: 5)

With this GAS promoter element linked to the SV40 promoter, a GAS:SEAP2 reporter construct is next engineered. Here, the reporter molecule is a secreted alkaline phosphatase, or "SEAP." Clearly, however, any reporter molecule can be instead of SEAP, in this or in any of the other Examples. Well known reporter molecules that can be used instead of SEAP include chloramphenicol acetyltransferase (CAT), luciferase, alkaline phosphatase, B-galactosidase, green fluorescent protein (GFP), or any protein detectable by an antibody.

The above sequence confirmed synthetic GAS-SV40 promoter element is subcloned into the pSEAP-Promoter vector obtained from Clontech using HindIII and XhoI, effectively replacing the SV40 promoter with the amplified GAS:SV40 promoter element, to create the GAS-SEAP vector. However, this vector does not contain a neomycin resistance gene, and therefore, is not preferred for mammalian expression systems.

Thus, in order to generate mammalian stable cell lines expressing the GAS-SEAP reporter, the GAS-SEAP cassette is removed from the GAS-SEAP vector using SalI and NotI, and inserted into a backbone vector containing the neomycin resistance gene, such as pGFP-1 (Clontech), using these restriction sites in the multiple cloning site, to create the GAS-SEAP/Neo vector. Once this

vector is transfected into mammalian cells, this vector can then be used as a reporter molecule for GAS binding as described in Examples 32-33.

Other constructs can be made using the above description and replacing GAS with a different promoter sequence. For example, construction of reporter molecules containing EGR and NF-KB promoter sequences are described in Examples 34 and 35. However, many other promoters can be substituted using the protocols described in these Examples. For instance, SRE, IL-2, NFAT, or Osteocalcin promoters can be substituted, alone or in combination (e.g., GAS/NF-KB/EGR, GAS/NF-KB, IL-2/NFAT, or NF-KB/GAS). Similarly, other cell lines can be used to test reporter construct activity, such as HELA (epithelial), HUVEC (endothelial), Reh (B-cell), Saos-2 (osteoblast), HUVAC (aortic), or Cardiomyocyte.

Example 23: Assay for SEAP Activity

As a reporter molecule for the assays described in Examples 32-35, SEAP activity is assayed using the Tropix Phospho-light Kit (Cat. BP-400) according to the following general procedure. The Tropix Phospho-light Kit supplies the Dilution, Assay, and Reaction Buffers used below.

Prime a dispenser with the 2.5x Dilution Buffer and dispense 15 ul of 2.5x dilution buffer into Optiplates containing 35 ul of a supernatant. Seal the plates with a plastic sealer and incubate at 65 degree C for 30 min. Separate the Optiplates to avoid uneven heating.

Cool the samples to room temperature for 15 minutes. Empty the dispenser and prime with the Assay Buffer. Add 50 ml Assay Buffer and incubate at room temperature 5 min. Empty the dispenser and prime with the Reaction Buffer (see the Table below). Add 50 ul Reaction Buffer and incubate at room temperature for 20 minutes. Since the intensity of the chemiluminescent signal is time dependent, and it takes about 10 minutes to read 5 plates on a luminometer, thus one should treat 5 plates at each time and start the second set 10 minutes later.

Read the relative light unit in the luminometer. Set H12 as blank, and print the results. An increase in chemiluminescence indicates reporter activity.

Reaction Buffer Formulation:

# of plates	Rxn buffer diluent (ml)	CSPD (ml)
10	60	3
11	65	3.25
12	70	3.5
13	75	3.75
14	80	4
15	85	4.25
16	90	4.5

17	95	4.75
18	100	5
19	105	5.25
20	110	5.5
21	115	5.75
22	120	6
23	125	6.25
24	130	6.5
25	135	6.75
26	140	7
27	145	7.25
28	150	7.5
29	155	7.75
30	160	8
31	165	8.25
32	170	8.5
33	175	8.75
34	180	9
35	185	9.25
36	190	9.5
37	195	9.75
38	200	10
39	205	10.25
40	210	10.5
41	215	10.75
42	220	11
43	225	11.25
44	230	11.5
45	235	11.75
46	240	12
47	245	12.25
48	250	12.5
49	255	12.75
50	260	13

Example 24: High-Throughput Screening Assay Identifying Changes in Small Molecule Concentration and Membrane Permeability

5

Binding of a ligand to a receptor is known to alter intracellular levels of small molecules, such as calcium, potassium, sodium, and pH, as well as alter membrane potential. These alterations can be measured in an assay to identify supernatants which bind to receptors of a particular cell. Although the following protocol describes an assay for calcium, this protocol can easily be modified to detect changes in potassium, sodium, pH, membrane potential, or any other small molecule which is detectable by a fluorescent probe.

10

The following assay uses Fluorometric Imaging Plate Reader ("FLIPR") to measure changes in fluorescent molecules (Molecular Probes) that bind small molecules. Clearly, any

fluorescent molecule detecting a small molecule can be used instead of the calcium fluorescent molecule, fluo-4 (Molecular Probes, Inc.; catalog no. F-14202), used here.

For adherent cells, seed the cells at 10,000 -20,000 cells/well in a Co-star black 96-well plate with clear bottom. The plate is incubated in a CO₂ incubator for 20 hours. The adherent cells
5 are washed two times in Biotek washer with 200 ul of HBSS (Hank's Balanced Salt Solution) leaving 100 ul of buffer after the final wash.

A stock solution of 1 mg/ml fluo-4 is made in 10% pluronic acid DMSO. To load the cells with fluo-4, 50 ul of 12 ug/ml fluo-4 is added to each well. The plate is incubated at 37 degrees C in a CO₂ incubator for 60 min. The plate is washed four times in the Biotek washer with
10 HBSS leaving 100 ul of buffer.

For non-adherent cells, the cells are spun down from culture media. Cells are re-suspended to 2.5×10^6 cells/ml with HBSS in a 50-ml conical tube. 4 ul of 1 mg/ml fluo-4 solution in 10% pluronic acid DMSO is added to each ml of cell suspension. The tube is then placed in a 37 degrees C water bath for 30-60 min. The cells are washed twice with HBSS, resuspended to
15 1×10^6 cells/ml, and dispensed into a microplate, 100 ul/well. The plate is centrifuged at 1000 rpm for 5 min. The plate is then washed once in Denley Cell Wash with 200 ul, followed by an aspiration step to 100 ul final volume.

For a non-cell based assay, each well contains a fluorescent molecule, such as fluo-4. The supernatant is added to the well, and a change in fluorescence is detected.

20 To measure the fluorescence of intracellular calcium, the FLIPR is set for the following parameters: (1) System gain is 300-800 mW; (2) Exposure time is 0.4 second; (3) Camera F/stop is F/2; (4) Excitation is 488 nm; (5) Emission is 530 nm; and (6) Sample addition is 50 ul. Increased emission at 530 nm indicates an extracellular signaling event caused by the a molecule, either polypeptide of the present invention or a molecule induced by polypeptide of the present
25 invention, which has resulted in an increase in the intracellular Ca⁺⁺ concentration.

Example 25: High-Throughput Screening Assay Identifying Tyrosine Kinase Activity

The Protein Tyrosine Kinases (PTK) represent a diverse group of transmembrane and
30 cytoplasmic kinases. Within the Receptor Protein Tyrosine Kinase RPTK) group are receptors for a range of mitogenic and metabolic growth factors including the PDGF, FGF, EGF, NGF, HGF and Insulin receptor subfamilies. In addition there are a large family of RPTKs for which the corresponding ligand is unknown. Ligands for RPTKs include mainly secreted small proteins, but also membrane-bound and extracellular matrix proteins.

Activation of RPTK by ligands involves ligand-mediated receptor dimerization, resulting in transphosphorylation of the receptor subunits and activation of the cytoplasmic tyrosine kinases. The cytoplasmic tyrosine kinases include receptor associated tyrosine kinases of the src-family (e.g., src, yes, lck, lyn, fyn) and non-receptor linked and cytosolic protein tyrosine kinases, such as the Jak family, members of which mediate signal transduction triggered by the cytokine superfamily of receptors (e.g., the Interleukins, Interferons, GM-CSF, and Leptin).

Because of the wide range of known factors capable of stimulating tyrosine kinase activity, identifying whether polypeptide of the present invention or a molecule induced by polypeptide of the present invention is capable of activating tyrosine kinase signal transduction pathways is of interest. Therefore, the following protocol is designed to identify such molecules capable of activating the tyrosine kinase signal transduction pathways.

Seed target cells (e.g., primary keratinocytes) at a density of approximately 25,000 cells per well in a 96 well Loprodyne Silent Screen Plates purchased from Nalge Nunc (Naperville, IL). The plates are sterilized with two 30 minute rinses with 100% ethanol, rinsed with water and dried overnight. Some plates are coated for 2 hr with 100 ml of cell culture grade type I collagen (50 mg/ml), gelatin (2%) or polylysine (50 mg/ml), all of which can be purchased from Sigma Chemicals (St. Louis, MO) or 10% Matrigel purchased from Becton Dickinson (Bedford, MA), or calf serum, rinsed with PBS and stored at 4 degree C. Cell growth on these plates is assayed by seeding 5,000 cells/well in growth medium and indirect quantitation of cell number through use of alamarBlue as described by the manufacturer Alamar Biosciences, Inc. (Sacramento, CA) after 48 hr. Falcon plate covers #3071 from Becton Dickinson (Bedford, MA) are used to cover the Loprodyne Silent Screen Plates. Falcon Microtest III cell culture plates can also be used in some proliferation experiments.

To prepare extracts, A431 cells are seeded onto the nylon membranes of Loprodyne plates (20,000/200ml/well) and cultured overnight in complete medium. Cells are quiesced by incubation in serum-free basal medium for 24 hr. After 5-20 minutes treatment with EGF (60ng/ml) or 50 ul of the supernatant produced in Example 21, the medium was removed and 100 ml of extraction buffer ((20 mM HEPES pH 7.5, 0.15 M NaCl, 1% Triton X-100, 0.1% SDS, 2 mM Na₃VO₄, 2 mM Na₄P₂O₇ and a cocktail of protease inhibitors (# 1836170) obtained from Boehringer Mannheim (Indianapolis, IN)) is added to each well and the plate is shaken on a rotating shaker for 5 minutes at 4°C. The plate is then placed in a vacuum transfer manifold and the extract filtered through the 0.45 mm membrane bottoms of each well using house vacuum. Extracts are collected in a 96-well catch/assay plate in the bottom of the vacuum manifold and immediately placed on ice. To obtain extracts clarified by centrifugation, the content of each well,

after detergent solubilization for 5 minutes, is removed and centrifuged for 15 minutes at 4 degree C at 16,000 x g.

Test the filtered extracts for levels of tyrosine kinase activity. Although many methods of detecting tyrosine kinase activity are known, one method is described here.

5 Generally, the tyrosine kinase activity of a supernatant is evaluated by determining its ability to phosphorylate a tyrosine residue on a specific substrate (a biotinylated peptide). Biotinylated peptides that can be used for this purpose include PSK1 (corresponding to amino acids 6-20 of the cell division kinase cdc2-p34) and PSK2 (corresponding to amino acids 1-17 of gastrin). Both peptides are substrates for a range of tyrosine kinases and are available from
10 Boehringer Mannheim.

The tyrosine kinase reaction is set up by adding the following components in order. First, add 10ul of 5uM Biotinylated Peptide, then 10ul ATP/Mg₂₊ (5mM ATP/50mM MgCl₂), then 10ul of 5x Assay Buffer (40mM imidazole hydrochloride, pH7.3, 40 mM beta-glycerophosphate, 1mM EGTA, 100mM MgCl₂, 5 mM MnCl₂, 0.5 mg/ml BSA), then 5ul of Sodium
15 Vanadate(1mM), and then 5ul of water. Mix the components gently and preincubate the reaction mix at 30 degree C for 2 min. Initial the reaction by adding 10ul of the control enzyme or the filtered supernatant.

The tyrosine kinase assay reaction is then terminated by adding 10 ul of 120mM EDTA and place the reactions on ice.

20 Tyrosine kinase activity is determined by transferring 50 ul aliquot of reaction mixture to a microtiter plate (MTP) module and incubating at 37 degree C for 20 min. This allows the streptavidin-coated 96 well plate to associate with the biotinylated peptide. Wash the MTP module with 300ul/well of PBS four times. Next add 75 ul of anti-phosphotyrosine antibody conjugated to horse radish peroxidase(anti-P-Tyr-POD(0.5u/ml)) to each well and incubate at 37 degree C for
25 one hour. Wash the well as above.

Next add 100ul of peroxidase substrate solution (Boehringer Mannheim) and incubate at room temperature for at least 5 mins (up to 30 min). Measure the absorbance of the sample at 405 nm by using ELISA reader. The level of bound peroxidase activity is quantitated using an ELISA reader and reflects the level of tyrosine kinase activity.

30

Example 26: High-Throughput Screening Assay Identifying Phosphorylation Activity

As a potential alternative and/or complement to the assay of protein tyrosine kinase activity described in Example 25, an assay which detects activation (phosphorylation) of major
35 intracellular signal transduction intermediates can also be used. For example, as described below

one particular assay can detect tyrosine phosphorylation of the Erk-1 and Erk-2 kinases. However, phosphorylation of other molecules, such as Raf, JNK, p38 MAP, Map kinase kinase (MEK), MEK kinase, Src, Muscle specific kinase (MuSK), IRAK, Tec, and Janus, as well as any other phosphoserine, phosphotyrosine, or phosphothreonine molecule, can be detected by substituting
5 these molecules for Erk-1 or Erk-2 in the following assay.

Specifically, assay plates are made by coating the wells of a 96-well ELISA plate with 0.1ml of protein G (1ug/ml) for 2 hr at room temp, (RT). The plates are then rinsed with PBS and blocked with 3% BSA/PBS for 1 hr at RT. The protein G plates are then treated with 2 commercial monoclonal antibodies (100ng/well) against Erk-1 and Erk-2 (1 hr at RT) (Santa Cruz
10 Biotechnology). (To detect other molecules, this step can easily be modified by substituting a monoclonal antibody detecting any of the above described molecules.) After 3-5 rinses with PBS, the plates are stored at 4 degree C until use.

A431 cells are seeded at 20,000/well in a 96-well Loprodyn filterplate and cultured overnight in growth medium. The cells are then starved for 48 hr in basal medium (DMEM) and
15 then treated with EGF (6ng/well) or 50 ul of the supernatants obtained in Example 21 for 5-20 minutes. The cells are then solubilized and extracts filtered directly into the assay plate.

After incubation with the extract for 1 hr at RT, the wells are again rinsed. As a positive control, a commercial preparation of MAP kinase (10ng/well) is used in place of A431 extract. Plates are then treated with a commercial polyclonal (rabbit) antibody (1ug/ml) which specifically
20 recognizes the phosphorylated epitope of the Erk-1 and Erk-2 kinases (1 hr at RT). This antibody is biotinylated by standard procedures. The bound polyclonal antibody is then quantitated by successive incubations with Europium-streptavidin and Europium fluorescence enhancing reagent in the Wallac DELFIA instrument (time-resolved fluorescence). An increased fluorescent signal over background indicates a phosphorylation by polypeptide of the present invention or a molecule
25 induced by polypeptide of the present invention.

Example 27: Cellular Adhesion Molecule (CAM) Expression on Endothelial Cells

The recruitment of lymphocytes to areas of inflammation and angiogenesis involves
30 specific receptor-ligand interactions between cell surface adhesion molecules (CAMs) on lymphocytes and the vascular endothelium. The adhesion process, in both normal and pathological settings, follows a multi-step cascade that involves intercellular adhesion molecule-1 (ICAM-1), vascular cell adhesion molecule-1 (VCAM-1), and endothelial leukocyte adhesion molecule-1 (E-selectin) expression on endothelial cells (EC). The expression of these molecules
35 and others on the vascular endothelium determines the efficiency with which leukocytes may

adhere to the local vasculature and extravasate into the local tissue during the development of an inflammatory response. The local concentration of cytokines and growth factor participate in the modulation of the expression of these CAMs.

Briefly, endothelial cells (e.g., Human Umbilical Vein Endothelial cells (HUVECs)) are grown in a standard 96 well plate to confluence, growth medium is removed from the cells and replaced with 100 μ l of 199 Medium (10% fetal bovine serum (FBS)). Samples for testing and positive or negative controls are added to the plate in triplicate (in 10 μ l volumes). Plates are then incubated at 37°C for either 5 h (selectin and integrin expression) or 24 h (integrin expression only). Plates are aspirated to remove medium and 100 μ l of 0.1% paraformaldehyde-PBS(with Ca++ and Mg++) is added to each well. Plates are held at 4°C for 30 min. Fixative is removed from the wells and wells are washed 1X with PBS(+Ca,Mg) + 0.5% BSA and drained. 10 μ l of diluted primary antibody is added to the test and control wells. Anti-ICAM-1-Biotin, Anti-VCAM-1-Biotin and Anti-E-selectin-Biotin are used at a concentration of 10 μ g/ml (1:10 dilution of 0.1 mg/ml stock antibody). Cells are incubated at 37°C for 30 min. in a humidified environment. Wells are washed three times with PBS(+Ca,Mg) + 0.5% BSA. 20 μ l of diluted ExtrAvidin-Alkaline Phosphatase (1:5,000 dilution, referred to herein as the working dilution) are added to each well and incubated at 37°C for 30 min. Wells are washed three times with PBS(+Ca,Mg)+0.5% BSA. Dissolve 1 tablet of p-Nitrophenol Phosphate pNPP per 5 ml of glycine buffer (pH 10.4). 100 μ l of pNPP substrate in glycine buffer is added to each test well. Standard wells in triplicate are prepared from the working dilution of the ExtrAvidin-Alkaline Phosphatase in glycine buffer: 1:5,000 (10^0) > $10^{-0.5}$ > 10^{-1} > $10^{-1.5}$. 5 μ l of each dilution is added to triplicate wells and the resulting AP content in each well is 5.50 ng, 1.74 ng, 0.55 ng, 0.18 ng. 100 μ l of pNPP reagent is then added to each of the standard wells. The plate is incubated at 37°C for 4h. A volume of 50 μ l of 3M NaOH is added to all wells. The plate is read on a plate reader at 405 nm using the background subtraction option on blank wells filled with glycine buffer only. Additionally, the template is set up to indicate the concentration of AP-conjugate in each standard well [5.50 ng; 1.74 ng; 0.55 ng; 0.18 ng]. Results are indicated as amount of bound AP-conjugate in each sample.

Example 28: Alamar Blue Endothelial Cells Proliferation Assay

This assay may be used to quantitatively determine protein mediated inhibition of bFGF-induced proliferation of Bovine Lymphatic Endothelial Cells (LECs), Bovine Aortic Endothelial Cells (BAECs) or Human Microvascular Uterine Myometrial Cells (UTMECs). This assay incorporates a fluorometric growth indicator based on detection of metabolic activity. A standard

Alamar Blue Proliferation Assay is prepared in EGM-2MV with 10 ng /ml of bFGF added as a source of endothelial cell stimulation. This assay may be used with a variety of endothelial cells with slight changes in growth medium and cell concentration. Dilutions of the protein batches to be tested are diluted as appropriate. Serum-free medium (GIBCO SFM) without bFGF is used as a non-stimulated control and Angiostatin or TSP-1 are included as a known inhibitory controls.

Briefly, LEC, BAECs or UTMECs are seeded in growth media at a density of 5000 to 2000 cells/well in a 96 well plate and placed at 37 degreesC overnight. After the overnight incubation of the cells, the growth media is removed and replaced with GIBCO EC-SFM. The cells are treated with the appropriate dilutions of the protein of interest or control protein sample(s) (prepared in SFM) in triplicate wells with additional bFGF to a concentration of 10 ng/ ml. Once the cells have been treated with the samples, the plate(s) is/are placed back in the 37° C incubator for three days. After three days 10 ml of stock alamar blue (Biosource Cat# DAL1100) is added to each well and the plate(s) is/are placed back in the 37°C incubator for four hours. The plate(s) are then read at 530nm excitation and 590nm emission using the CytoFluor fluorescence reader. Direct output is recorded in relative fluorescence units.

Alamar blue is an oxidation-reduction indicator that both fluoresces and changes color in response to chemical reduction of growth medium resulting from cell growth. As cells grow in culture, innate metabolic activity results in a chemical reduction of the immediate surrounding environment. Reduction related to growth causes the indicator to change from oxidized (non-fluorescent blue) form to reduced (fluorescent red) form (i.e., stimulated proliferation will produce a stronger signal and inhibited proliferation will produce a weaker signal and the total signal is proportional to the total number of cells as well as their metabolic activity). The background level of activity is observed with the starvation medium alone. This is compared to the output observed from the positive control samples (bFGF in growth medium) and protein dilutions.

25

Example 29: Detection of Inhibition of a Mixed Lymphocyte Reaction

This assay can be used to detect and evaluate inhibition of a Mixed Lymphocyte Reaction (MLR) by gene products (e.g., isolated polypeptides). Inhibition of a MLR may be due to a direct effect on cell proliferation and viability, modulation of costimulatory molecules on interacting cells, modulation of adhesiveness between lymphocytes and accessory cells, or modulation of cytokine production by accessory cells. Multiple cells may be targeted by these polypeptides since the peripheral blood mononuclear fraction used in this assay includes T, B and natural killer lymphocytes, as well as monocytes and dendritic cells.

Polypeptides of interest found to inhibit the MLR may find application in diseases

associated with lymphocyte and monocyte activation or proliferation. These include, but are not limited to, diseases such as asthma, arthritis, diabetes, inflammatory skin conditions, psoriasis, eczema, systemic lupus erythematosus, multiple sclerosis, glomerulonephritis, inflammatory bowel disease, crohn's disease, ulcerative colitis, arteriosclerosis, cirrhosis, graft vs. host disease, host vs. graft disease, hepatitis, leukemia and lymphoma.

Briefly, PBMCs from human donors are purified by density gradient centrifugation using Lymphocyte Separation Medium (LSM[®], density 1.0770 g/ml, Organon Teknika Corporation, West Chester, PA). PBMCs from two donors are adjusted to 2×10^6 cells/ml in RPMI-1640 (Life Technologies, Grand Island, NY) supplemented with 10% FCS and 2 mM glutamine. PBMCs from a third donor is adjusted to 2×10^5 cells/ml. Fifty microliters of PBMCs from each donor is added to wells of a 96-well round bottom microtiter plate. Dilutions of test materials (50 μ l) is added in triplicate to microtiter wells. Test samples (of the protein of interest) are added for final dilution of 1:4; rhuIL-2 (R&D Systems, Minneapolis, MN, catalog number 202-IL) is added to a final concentration of 1 μ g/ml; anti-CD4 mAb (R&D Systems, clone 34930.11, catalog number MAB379) is added to a final concentration of 10 μ g/ml. Cells are cultured for 7-8 days at 37°C in 5% CO₂, and 1 μ C of [³H] thymidine is added to wells for the last 16 hrs of culture. Cells are harvested and thymidine incorporation determined using a Packard TopCount. Data is expressed as the mean and standard deviation of triplicate determinations.

Samples of the protein of interest are screened in separate experiments and compared to the negative control treatment, anti-CD4 mAb, which inhibits proliferation of lymphocytes and the positive control treatment, IL-2 (either as recombinant material or supernatant), which enhances proliferation of lymphocytes.

One skilled in the art could easily modify the exemplified studies to test the activity of polynucleotides (e.g., gene therapy), antibodies, agonists, and/or antagonists and fragments and variants thereof.

Example 30: Assays for Protease Activity

The following assay may be used to assess protease activity of the polypeptides of the invention.

Gelatin and casein zymography are performed essentially as described (Heusen et al., *Anal. Biochem.*, 102:196-202 (1980); Wilson et al., *Journal of Urology*, 149:653-658 (1993)). Samples are run on 10% polyacrylamide/0.1% SDS gels containing 1% gelatin or casein, soaked in 2.5% triton at room temperature for 1 hour, and in 0.1M glycine, pH 8.3 at 37°C 5 to 16 hours.

After staining in amido black areas of proteolysis appear as clear areas against the blue-black background. Trypsin (Sigma T8642) is used as a positive control.

Protease activity is also determined by monitoring the cleavage of n-a-benzoyl-L-arginine ethyl ester (BAEE) (Sigma B-4500. Reactions are set up in (25mMNaPO₄, 1mM EDTA, and 1mM
5 BAEE), pH 7.5. Samples are added and the change in adsorbance at 260nm is monitored on the Beckman DU-6 spectrophotometer in the time-drive mode. Trypsin is used as a positive control.

Additional assays based upon the release of acid-soluble peptides from casein or hemoglobin measured as adsorbance at 280 nm or colorimetrically using the Folin method are performed as described in Bergmeyer, et al., *Methods of Enzymatic Analysis*, 5 (1984). Other
10 assays involve the solubilization of chromogenic substrates (Ward, *Applied Science*, 251-317 (1983)).

Example 31: Identifying Serine Protease Substrate Specificity

15 Methods known in the art or described herein may be used to determine the substrate specificity of the polypeptides of the present invention having serine protease activity. A preferred method of determining substrate specificity is by the use of positional scanning synthetic combinatorial libraries as described in GB 2 324 529 (incorporated herein in its entirety).

Example 32: Ligand Binding Assays

The following assay may be used to assess ligand binding activity of the polypeptides of the invention.

Ligand binding assays provide a direct method for ascertaining receptor pharmacology and
25 are adaptable to a high throughput format. The purified ligand for a polypeptide is radiolabeled to high specific activity (50-2000 Ci/mmol) for binding studies. A determination is then made that the process of radiolabeling does not diminish the activity of the ligand towards its polypeptide. Assay conditions for buffers, ions, pH and other modulators such as nucleotides are optimized to establish a workable signal to noise ratio for both membrane and whole cell polypeptide sources.
30 For these assays, specific polypeptide binding is defined as total associated radioactivity minus the radioactivity measured in the presence of an excess of unlabeled competing ligand. Where possible, more than one competing ligand is used to define residual nonspecific binding.

Example 33: Functional Assay in Xenopus Oocytes

35

Capped RNA transcripts from linearized plasmid templates encoding the polypeptides of the invention are synthesized in vitro with RNA polymerases in accordance with standard procedures. In vitro transcripts are suspended in water at a final concentration of 0.2 mg/ml. Ovarian lobes are removed from adult female toads, Stage V defolliculated oocytes are obtained, and RNA transcripts (10 ng/oocyte) are injected in a 50 nl bolus using a microinjection apparatus. Two electrode voltage clamps are used to measure the currents from individual *Xenopus oocytes* in response polypeptides and polypeptide agonist exposure. Recordings are made in Ca²⁺ free Barth's medium at room temperature. The *Xenopus* system can be used to screen known ligands and tissue/cell extracts for activating ligands.

Example 34: Microphysiometric Assays

Activation of a wide variety of secondary messenger systems results in extrusion of small amounts of acid from a cell. The acid formed is largely as a result of the increased metabolic activity required to fuel the intracellular signaling process. The pH changes in the media surrounding the cell are very small but are detectable by the CYTOSENSOR microphysiometer (Molecular Devices Ltd., Menlo Park, Calif.). The CYTOSENSOR is thus capable of detecting the activation of polypeptide which is coupled to an energy utilizing intracellular signaling pathway.

Example 35: Extract/Cell Supernatant Screening

A large number of mammalian receptors exist for which there remains, as yet, no cognate activating ligand (agonist). Thus, active ligands for these receptors may not be included within the ligands banks as identified to date. Accordingly, the polypeptides of the invention can also be functionally screened (using calcium, cAMP, microphysiometer, oocyte electrophysiology, etc., functional screens) against tissue extracts to identify its natural ligands. Extracts that produce positive functional responses can be sequentially subfractionated until an activating ligand is isolated and identified.

Example 36: Calcium and cAMP Functional Assays

Seven transmembrane receptors which are expressed in HEK 293 cells have been shown to be coupled functionally to activation of PLC and calcium mobilization and/or cAMP stimulation or inhibition. Basal calcium levels in the HEK 293 cells in receptor-transfected or vector control

cells were observed to be in the normal, 100 nM to 200 nM, range. HEK 293 cells expressing recombinant receptors are loaded with fura 2 and in a single day >150 selected ligands or tissue/cell extracts are evaluated for agonist induced calcium mobilization. Similarly, HEK 293 cells expressing recombinant receptors are evaluated for the stimulation or inhibition of cAMP
5 production using standard cAMP quantitation assays. Agonists presenting a calcium transient or cAMP fluctuation are tested in vector control cells to determine if the response is unique to the transfected cells expressing receptor.

Example 37: ATP-binding assay

10

The following assay may be used to assess ATP-binding activity of polypeptides of the invention.

ATP-binding activity of the polypeptides of the invention may be detected using the ATP-binding assay described in U.S. Patent 5,858,719, which is herein incorporated by reference in its
15 entirety. Briefly, ATP-binding to polypeptides of the invention is measured via photoaffinity labeling with 8-azido-ATP in a competition assay. Reaction mixtures containing 1 mg/ml of the ABC transport protein of the present invention are incubated with varying concentrations of ATP, or the non-hydrolyzable ATP analog adenylyl-5'-imidodiphosphate for 10 minutes at 4°C. A mixture
of 8-azido-ATP (Sigma Chem. Corp., St. Louis, MO.) plus 8-azido-ATP (³²P-ATP) (5 mCi/μmol,
20 ICN, Irvine CA.) is added to a final concentration of 100 μM and 0.5 ml aliquots are placed in the wells of a porcelain spot plate on ice. The plate is irradiated using a short wave 254 nm UV lamp at a distance of 2.5 cm from the plate for two one-minute intervals with a one-minute cooling interval in between. The reaction is stopped by addition of dithiothreitol to a final concentration of 2mM. The incubations are subjected to SDS-PAGE electrophoresis, dried, and autoradiographed.
25 Protein bands corresponding to the particular polypeptides of the invention are excised, and the radioactivity quantified. A decrease in radioactivity with increasing ATP or adenylyl-5'-imidodiphosphate provides a measure of ATP affinity to the polypeptides.

30

Example 38: Small Molecule Screening

This invention is particularly useful for screening therapeutic compounds by using the polypeptides of the invention, or binding fragments thereof, in any of a variety of drug screening techniques. The polypeptide or fragment employed in such a test may be affixed to a solid support,
35 expressed on a cell surface, free in solution, or located intracellularly. One method of drug

screening utilizes eukaryotic or prokaryotic host cells which are stably transformed with recombinant nucleic acids expressing the polypeptide or fragment. Drugs are screened against such transformed cells in competitive binding assays. One may measure, for example, the formulation of complexes between the agent being tested and polypeptide of the invention.

5 Thus, the present invention provides methods of screening for drugs or any other agents which affect activities mediated by the polypeptides of the invention. These methods comprise contacting such an agent with a polypeptide of the invention or fragment thereof and assaying for the presence of a complex between the agent and the polypeptide or fragment thereof, by methods well known in the art. In such a competitive binding assay, the agents to screen are typically
10 labeled. Following incubation, free agent is separated from that present in bound form, and the amount of free or uncomplexed label is a measure of the ability of a particular agent to bind to the polypeptides of the invention.

Another technique for drug screening provides high throughput screening for compounds having suitable binding affinity to the polypeptides of the invention, and is described in great detail
15 in European Patent Application 84/03564, published on September 13, 1984, which is herein incorporated by reference in its entirety. Briefly stated, large numbers of different small molecule test compounds are synthesized on a solid substrate, such as plastic pins or some other surface. The test compounds are reacted with polypeptides of the invention and washed. Bound polypeptides are then detected by methods well known in the art. Purified polypeptides are coated directly onto
20 plates for use in the aforementioned drug screening techniques. In addition, non-neutralizing antibodies may be used to capture the peptide and immobilize it on the solid support.

This invention also contemplates the use of competitive drug screening assays in which neutralizing antibodies capable of binding polypeptides of the invention specifically compete with a test compound for binding to the polypeptides or fragments thereof. In this manner, the
25 antibodies are used to detect the presence of any peptide which shares one or more antigenic epitopes with a polypeptide of the invention.

Example 39: Phosphorylation Assay

30 In order to assay for phosphorylation activity of the polypeptides of the invention, a phosphorylation assay as described in U.S. Patent 5,958,405 (which is herein incorporated by reference) is utilized. Briefly, phosphorylation activity may be measured by phosphorylation of a protein substrate using gamma-labeled ^{32}P -ATP and quantitation of the incorporated radioactivity using a gamma radioisotope counter. The polypeptides of the invention are incubated with the
35 protein substrate, ^{32}P -ATP, and a kinase buffer. The ^{32}P incorporated into the substrate is then

separated from free ^{32}P -ATP by electrophoresis, and the incorporated ^{32}P is counted and compared to a negative control. Radioactivity counts above the negative control are indicative of phosphorylation activity of the polypeptides of the invention.

5 ***Example 40: Detection of Phosphorylation Activity (Activation) of the Polypeptides of the Invention in the Presence of Polypeptide Ligands***

Methods known in the art or described herein may be used to determine the phosphorylation activity of the polypeptides of the invention. A preferred method of determining
10 phosphorylation activity is by the use of the tyrosine phosphorylation assay as described in US 5,817,471 (incorporated herein by reference).

15 ***Example 41: Identification Of Signal Transduction Proteins That Interact With Polypeptides Of The Present Invention***

The purified polypeptides of the invention are research tools for the identification, characterization and purification of additional signal transduction pathway proteins or receptor proteins. Briefly, labeled polypeptides of the invention are useful as reagents for the purification of
20 molecules with which it interacts. In one embodiment of affinity purification, polypeptides of the invention are covalently coupled to a chromatography column. Cell-free extract derived from putative target cells, such as carcinoma tissues, is passed over the column, and molecules with appropriate affinity bind to the polypeptides of the invention. The protein complex is recovered from the column, dissociated, and the recovered molecule subjected to N-terminal protein
25 sequencing. This amino acid sequence is then used to identify the captured molecule or to design degenerate oligonucleotide probes for cloning the relevant gene from an appropriate cDNA library.

Example 42: Assay for Phosphatase Activity

30 The following assay may be used to assess serine/threonine phosphatase (PTPase) activity of the polypeptides of the invention.

In order to assay for serine/threonine phosphatase (PTPase) activity, assays can be utilized which are widely known to those skilled in the art. For example, the serine/threonine phosphatase (PSPase) activity is measured using a PSPase assay kit from New England Biolabs, Inc. Myelin
35 basic protein (MyBP), a substrate for PSPase, is phosphorylated on serine and threonine residues

with cAMP-dependent Protein Kinase in the presence of [³²P]ATP. Protein serine/threonine phosphatase activity is then determined by measuring the release of inorganic phosphate from 32P-labeled MyBP.

5 ***Example 43: Interaction of Serine/Threonine Phosphatases with other Proteins***

The polypeptides of the invention with serine/threonine phosphatase activity as determined in Example 42 are research tools for the identification, characterization and purification of additional interacting proteins or receptor proteins, or other signal transduction pathway proteins. Briefly, labeled polypeptide(s) of the invention is useful as a reagent for the purification of molecules with which it interacts. In one embodiment of affinity purification, polypeptide of the invention is covalently coupled to a chromatography column. Cell-free extract derived from putative target cells, such as neural or liver cells, is passed over the column, and molecules with appropriate affinity bind to the polypeptides of the invention. The polypeptides of the invention - complex is recovered from the column, dissociated, and the recovered molecule subjected to N-terminal protein sequencing. This amino acid sequence is then used to identify the captured molecule or to design degenerate oligonucleotide probes for cloning the relevant gene from an appropriate cDNA library.

20 ***Example 44: Assaying for Heparanase Activity***

In order to assay for heparanase activity of the polypeptides of the invention, the heparanase assay described by Vlodavsky et al is utilized (Vlodavsky, I., et al., Nat. Med., 5:793-802 (1999)). Briefly, cell lysates, conditioned media or intact cells (1 x 10⁶ cells per 35-mm dish) are incubated for 18 hrs at 37°C, pH 6.2-6.6, with ³⁵S-labeled ECM or soluble ECM derived peak I proteoglycans. The incubation medium is centrifuged and the supernatant is analyzed by gel filtration on a Sepharose CL-6B column (0.9 x 30 cm). Fractions are eluted with PBS and their radioactivity is measured. Degradation fragments of heparan sulfate side chains are eluted from Sepharose 6B at 0.5 < K_{av} < 0.8 (peak II). Each experiment is done at least three times. Degradation fragments corresponding to "peak II," as described by Vlodavsky et al., is indicative of the activity of the polypeptides of the invention in cleaving heparan sulfate.

Example 45: Immobilization of biomolecules

35 This example provides a method for the stabilization of polypeptides of the invention in non-host cell lipid bilayer constructs (see, e.g., Bieri et al., Nature Biotech 17:1105-1108 (1999),

hereby incorporated by reference in its entirety herein) which can be adapted for the study of polypeptides of the invention in the various functional assays described above. Briefly, carbohydrate-specific chemistry for biotinylation is used to confine a biotin tag to the extracellular domain of the polypeptides of the invention, thus allowing uniform orientation upon immobilization. A 50uM solution of polypeptides of the invention in washed membranes is incubated with 20 mM NaIO₄ and 1.5 mg/ml (4mM) BACH or 2 mg/ml (7.5mM) biotin-hydrazide for 1 hr at room temperature (reaction volume, 150ul). Then the sample is dialyzed (Pierce Slidealizer Cassett, 10 kDa cutoff; Pierce Chemical Co., Rockford IL) at 4C first for 5 h, exchanging the buffer after each hour, and finally for 12 h against 500 ml buffer R (0.15 M NaCl, 1 mM MgCl₂, 10 mM sodium phosphate, pH7). Just before addition into a cuvette, the sample is diluted 1:5 in buffer ROG50 (Buffer R supplemented with 50 mM octylglucoside).

Example 46: TAQMAN

15

Quantitative PCR (QPCR). Total RNA from cells in culture are extracted by Trizol separation as recommended by the supplier (LifeTechnologies). (Total RNA is treated with DNase I (Life Technologies) to remove any contaminating genomic DNA before reverse transcription.) Total RNA (50 ng) is used in a one-step, 50ul, RT-QPCR, consisting of Taqman Buffer A (Perkin-Elmer; 50 mM KCl/10 mM Tris, pH 8.3), 5.5 mM MgCl₂, 240 μM each dNTP, 0.4 units RNase inhibitor(Promega), 8%glycerol, 0.012% Tween-20, 0.05% gelatin, 0.3uM primers, 0.1uM probe, 0.025units Amplitaq Gold (Perkin-Elmer) and 2.5 units Superscript II reverse transcriptase (Life Technologies). As a control for genomic contamination, parallel reactions are setup without reverse transcriptase. The relative abundance of (unknown) and 18S RNAs are assessed by using the Applied Biosystems Prism 7700 Sequence Detection System (Livak, K. J., Flood, S. J., Marmaro, J., Giusti, W. & Deetz, K. (1995) PCR Methods Appl. 4, 357-362). Reactions are carried out at 48°C for 30 min, 95°C for 10 min, followed by 40 cycles of 95°C for 15s, 60°C for 1 min. Reactions are performed in triplicate.

Primers (f & r) and FRET probes sets are designed using Primer Express Software (Perkin-Elmer). Probes are labeled at the 5'-end with the reporter dye 6-FAM and on the 3'-end with the quencher dye TAMRA (Biosource International, Camarillo, CA or Perkin-Elmer).

Example 47: Assays for Metalloproteinase Activity

Metalloproteinases (EC 3.4.24.-) are peptide hydrolases which use metal ions, such as Zn²⁺, as the catalytic mechanism. Metalloproteinase activity of polypeptides of the present

invention can be assayed according to the following methods.

Proteolysis of alpha-2-macroglobulin

To confirm protease activity, purified polypeptides of the invention are mixed with the
5 substrate alpha-2-macroglobulin (0.2 unit/ml; Boehringer Mannheim, Germany) in 1x assay buffer
(50 mM HEPES, pH 7.5, 0.2 M NaCl, 10 mM CaCl₂, 25 μM ZnCl₂ and 0.05% Brij-35) and
incubated at 37°C for 1-5 days. Trypsin is used as positive control. Negative controls contain only
alpha-2-macroglobulin in assay buffer. The samples are collected and boiled in SDS-PAGE
10 sample buffer containing 5% 2-mercaptoethanol for 5-min, then loaded onto 8% SDS-
polyacrylamide gel. After electrophoresis the proteins are visualized by silver staining. Proteolysis
is evident by the appearance of lower molecular weight bands as compared to the negative control.

Inhibition of alpha-2-macroglobulin proteolysis by inhibitors of metalloproteinases

Known metalloproteinase inhibitors (metal chelators (EDTA, EGTA, AND HgCl₂),
15 peptide metalloproteinase inhibitors (TIMP-1 and TIMP-2), and commercial small molecule MMP
inhibitors) are used to characterize the proteolytic activity of polypeptides of the invention. The
three synthetic MMP inhibitors used are: MMP inhibitor I, [IC₅₀ = 1.0 μM against MMP-1 and
MMP-8; IC₅₀ = 30 μM against MMP-9; IC₅₀ = 150 μM against MMP-3]; MMP-3 (stromelysin-1)
inhibitor I [IC₅₀ = 5 μM against MMP-3], and MMP-3 inhibitor II [K_i = 130 nM against MMP-3];
20 inhibitors available through Calbiochem, catalog # 444250, 444218, and 444225, respectively).
Briefly, different concentrations of the small molecule MMP inhibitors are mixed with purified
polypeptides of the invention (50μg/ml) in 22.9 μl of 1x HEPES buffer (50 mM HEPES, pH 7.5,
0.2 M NaCl, 10 mM CaCl₂, 25 μM ZnCl₂ and 0.05%Brij-35) and incubated at room temperature
(24 °C) for 2-hr, then 7.1 μl of substrate alpha-2-macroglobulin (0.2 unit/ml) is added and
25 incubated at 37°C for 20-hr. The reactions are stopped by adding 4x sample buffer and boiled
immediately for 5 minutes. After SDS-PAGE, the protein bands are visualized by silver stain.

Synthetic Fluorogenic Peptide Substrates Cleavage Assay

The substrate specificity for polypeptides of the invention with demonstrated
30 metalloproteinase activity can be determined using synthetic fluorogenic peptide substrates
(purchased from BACHEM Bioscience Inc). Test substrates include, M-1985, M-2225, M-2105,
M-2110, and M-2255. The first four are MMP substrates and the last one is a substrate of tumor
necrosis factor-α (TNF-α) converting enzyme (TACE). All the substrates are prepared in 1:1
dimethyl sulfoxide (DMSO) and water. The stock solutions are 50-500 μM. Fluorescent assays are
35 performed by using a Perkin Elmer LS 50B luminescence spectrometer equipped with a constant

temperature water bath. The excitation λ is 328 nm and the emission λ is 393 nm. Briefly, the assay is carried out by incubating 176 μ l 1x HEPES buffer (0.2 M NaCl, 10 mM CaCl_2 , 0.05% Brij-35 and 50 mM HEPES, pH 7.5) with 4 μ l of substrate solution (50 μ M) at 25 °C for 15 minutes, and then adding 20 μ l of a purified polypeptide of the invention into the assay cuvette. The final concentration of substrate is 1 μ M. Initial hydrolysis rates are monitored for 30-min.

Example 48: Characterization of the cDNA contained in a deposited plasmid

The size of the cDNA insert contained in a deposited plasmid may be routinely determined using techniques known in the art, such as PCR amplification using synthetic primers hybridizable to the 3' and 5' ends of the cDNA sequence. For example, two primers of 17-30 nucleotides derived from each end of the cDNA (i.e., hybridizable to the absolute 5' nucleotide or the 3' nucleotide end of the sequence of SEQ ID NO:X, respectively) are synthesized and used to amplify the cDNA using the deposited cDNA plasmid as a template. The polymerase chain reaction is carried out under routine conditions, for instance, in 25 μ l of reaction mixture with 0.5 μ g of the above cDNA template. A convenient reaction mixture is 1.5-5 mM MgCl_2 , 0.01% (w/v) gelatin, 20 μ M each of dATP, dCTP, dGTP, dTTP, 25 pmol of each primer and 0.25 Unit of Taq polymerase. Thirty five cycles of PCR (denaturation at 94 degree C for 1 min; annealing at 55 degree C for 1 min; elongation at 72 degree C for 1 min) are performed with a Perkin-Elmer Cetus automated thermal cycler. The amplified product is analyzed by agarose gel electrophoresis. The PCR product is verified to be the selected sequence by subcloning and sequencing the DNA product. It will be clear that the invention may be practiced otherwise than as particularly described in the foregoing description and examples. Numerous modifications and variations of the present invention are possible in light of the above teachings and, therefore, are within the scope of the appended claims.

Incorporation by Reference

The entire disclosure of each document cited (including patents, patent applications, journal articles, abstracts, laboratory manuals, books, or other disclosures) in the Background of the Invention, Detailed Description, and Examples is hereby incorporated herein by reference. In addition, the sequence listing submitted herewith is incorporated herein by reference in its entirety. The specification and sequence listing of each of the following U.S. and PCT applications are herein incorporated by reference in their entirety: U.S. Appln. No. 60/040,162 filed on 07-Mar-1997, U.S. Appln. No. 60/043,576 filed on 11-Apr-1997, U.S. Appln. No. 60/047,601 filed on 23-May-1997, U.S. Appln. No. 60/056,845 filed on 22-Aug-1997, U.S. Appln. No. 60/043,580 filed on 11-Apr-1997, U.S. Appln. No. 60/047,599 filed on 23-May-1997, U.S. Appln. No. 60/056,664

filed on 22-Aug-1997, U.S. Appln. No. 60/043,314 filed on 11-Apr-1997, U.S. Appln. No. 60/047,632 filed on 23-May-1997, U.S. Appln. No. 60/056,892 filed on 22-Aug-1997, U.S. Appln. No. 60/043,568 filed on 11-Apr-1997, U.S. Appln. No. 60/047,595 filed on 23-May-1997, U.S. Appln. No. 60/056,632 filed on 22-Aug-1997, U.S. Appln. No. 60/043,578 filed on 11-Apr-1997, U.S. Appln. No. 60/040,333 filed on 07-Mar-1997, U.S. Appln. No. 60/043,670 filed on 11-Apr-1997, U.S. Appln. No. 60/047,596 filed on 23-May-1997, U.S. Appln. No. 60/056,864 filed on 22-Aug-1997, U.S. Appln. No. 60/043,674 filed on 11-Apr-1997, U.S. Appln. No. 60/047,612 filed on 23-May-1997, U.S. Appln. No. 60/056,631 filed on 22-Aug-1997, U.S. Appln. No. 60/043,569 filed on 11-Apr-1997, U.S. Appln. No. 60/047,588 filed on 23-May-1997, U.S. Appln. No. 60/056,876 filed on 22-Aug-1997, U.S. Appln. No. 60/043,671 filed on 11-Apr-1997, U.S. Appln. No. 60/043,311 filed on 11-Apr-1997, U.S. Appln. No. 60/038,621 filed on 07-Mar-1997, U.S. Appln. No. 60/043,672 filed on 11-Apr-1997, U.S. Appln. No. 60/047,613 filed on 23-May-1997, U.S. Appln. No. 60/056,636 filed on 22-Aug-1997, U.S. Appln. No. 60/043,669 filed on 11-Apr-1997, U.S. Appln. No. 60/047,582 filed on 23-May-1997, U.S. Appln. No. 60/056,910 filed on 22-Aug-1997, U.S. Appln. No. 60/043,315 filed on 11-Apr-1997, U.S. Appln. No. 60/047,598 filed on 23-May-1997, U.S. Appln. No. 60/056,874 filed on 22-Aug-1997, U.S. Appln. No. 60/043,312 filed on 11-Apr-1997, U.S. Appln. No. 60/047,585 filed on 23-May-1997, U.S. Appln. No. 60/056,881 filed on 22-Aug-1997, U.S. Appln. No. 60/043,313 filed on 11-Apr-1997, U.S. Appln. No. 60/047,586 filed on 23-May-1997, U.S. Appln. No. 60/056,909 filed on 22-Aug-1997, U.S. Appln. No. 60/040,161 filed on 07-Mar-1997, U.S. Appln. No. 60/047,587 filed on 23-May-1997, U.S. Appln. No. 60/056,879 filed on 22-Aug-1997, U.S. Appln. No. 60/047,500 filed on 23-May-1997, U.S. Appln. No. 60/056,880 filed on 22-Aug-1997, U.S. Appln. No. 60/047,584 filed on 23-May-1997, U.S. Appln. No. 60/056,894 filed on 22-Aug-1997, U.S. Appln. No. 60/047,492 filed on 23-May-1997, U.S. Appln. No. 60/056,911 filed on 22-Aug-1997, U.S. Appln. No. 60/040,626 filed on 07-Mar-1997, U.S. Appln. No. 60/047,503 filed on 23-May-1997, U.S. Appln. No. 60/056,903 filed on 22-Aug-1997, U.S. Appln. No. 60/047,501 filed on 23-May-1997, U.S. Appln. No. 60/056,637 filed on 22-Aug-1997, U.S. Appln. No. 60/047,590 filed on 23-May-1997, U.S. Appln. No. 60/056,875 filed on 22-Aug-1997, U.S. Appln. No. 60/047,581 filed on 23-May-1997, U.S. Appln. No. 60/056,882 filed on 22-Aug-1997, U.S. Appln. No. 60/047,592 filed on 23-May-1997, U.S. Appln. No. 60/056,888 filed on 22-Aug-1997, U.S. Appln. No. 60/040,334 filed on 07-Mar-1997, U.S. Appln. No. 60/047,618 filed on 23-May-1997, U.S. Appln. No. 60/056,872 filed on 22-Aug-1997, U.S. Appln. No. 60/047,617 filed on 23-May-1997, U.S. Appln. No. 60/056,662 filed on 22-Aug-1997, U.S. Appln. No. 60/047,589 filed on 23-May-1997, U.S. Appln. No. 60/056,862 filed on 22-Aug-1997, U.S. Appln. No. 60/047,594 filed on 23-May-1997, U.S. Appln. No. 60/056,884 filed on 22-Aug-1997, U.S. Appln. No. 60/047,583 filed on 23-May-1997, U.S.

Appln. No. 60/056,878 filed on 22-Aug-1997, U.S. Appln. No. 60/040,336 filed on 07-Mar-1997, U.S. Appln. No. 60/047,502 filed on 23-May-1997, U.S. Appln. No. 60/056,893 filed on 22-Aug-1997, U.S. Appln. No. 60/047,633 filed on 23-May-1997, U.S. Appln. No. 60/056,630 filed on 22-Aug-1997, U.S. Appln. No. 60/047,593 filed on 23-May-1997, U.S. Appln. No. 60/056,887 filed on 22-Aug-1997, U.S. Appln. No. 60/040,163 filed on 07-Mar-1997, U.S. Appln. No. 60/047,597 filed on 23-May-1997, U.S. Appln. No. 60/056,889 filed on 22-Aug-1997, U.S. Appln. No. 60/047,615 filed on 23-May-1997, U.S. Appln. No. 60/056,877 filed on 22-Aug-1997, U.S. Appln. No. 60/047,600 filed on 23-May-1997, U.S. Appln. No. 60/056,886 filed on 22-Aug-1997, U.S. Appln. No. 60/047,614 filed on 23-May-1997, U.S. Appln. No. 60/056,908 filed on 22-Aug-1997, U.S. Appln. No. 60/040,710 filed on 14-Mar-1997, U.S. Appln. No. 60/050,934 filed on 30-May-1997, U.S. Appln. No. 60/048,100 filed on 30-May-1997, U.S. Appln. No. 60/040,762 filed on 14-Mar-1997, U.S. Appln. No. 60/048,357 filed on 30-May-1997, U.S. Appln. No. 60/048,189 filed on 30-May-1997, U.S. Appln. No. 60/041,277 filed on 21-Mar-1997, U.S. Appln. No. 60/048,188 filed on 30-May-1997, U.S. Appln. No. 60/048,094 filed on 30-May-1997, U.S. Appln. No. 60/048,350 filed on 30-May-1997, U.S. Appln. No. 60/048,135 filed on 30-May-1997, U.S. Appln. No. 60/042,344 filed on 21-Mar-1997, U.S. Appln. No. 60/048,187 filed on 30-May-1997, U.S. Appln. No. 60/048,099 filed on 30-May-1997, U.S. Appln. No. 60/050,937 filed on 30-May-1997, U.S. Appln. No. 60/048,352 filed on 30-May-1997, U.S. Appln. No. 60/041,276 filed on 21-Mar-1997, U.S. Appln. No. 60/048,069 filed on 30-May-1997, U.S. Appln. No. 60/048,131 filed on 30-May-1997, U.S. Appln. No. 60/048,186 filed on 30-May-1997, U.S. Appln. No. 60/048,095 filed on 30-May-1997, U.S. Appln. No. 60/041,281 filed on 21-Mar-1997, U.S. Appln. No. 60/048,355 filed on 30-May-1997, U.S. Appln. No. 60/048,096 filed on 30-May-1997, U.S. Appln. No. 60/048,351 filed on 30-May-1997, U.S. Appln. No. 60/048,154 filed on 30-May-1997, U.S. Appln. No. 60/048,160 filed on 30-May-1997, U.S. Appln. No. 60/042,825 filed on 08-Apr-1997, U.S. Appln. No. 60/048,070 filed on 30-May-1997, U.S. Appln. No. 60/042,727 filed on 08-Apr-1997, U.S. Appln. No. 60/048,068 filed on 30-May-1997, U.S. Appln. No. 60/042,726 filed on 08-Apr-1997, U.S. Appln. No. 60/048,184 filed on 30-May-1997, U.S. Appln. No. 60/042,728 filed on 08-Apr-1997, U.S. Appln. No. 60/042,754 filed on 08-Apr-1997, U.S. Appln. No. 60/048,190 filed on 30-May-1997, U.S. Appln. No. 60/044,039 filed on 30-May-1997, U.S. Appln. No. 60/048,093 filed on 30-May-1997, U.S. Appln. No. 60/048,885 filed on 06-Jun-1997, U.S. Appln. No. 60/057,645 filed on 05-Sep-1997, U.S. Appln. No. 60/049,375 filed on 06-Jun-1997, U.S. Appln. No. 60/057,642 filed on 05-Sep-1997, U.S. Appln. No. 60/048,881 filed on 06-Jun-1997, U.S. Appln. No. 60/057,668 filed on 05-Sep-1997, U.S. Appln. No. 60/048,880 filed on 06-Jun-1997, U.S. Appln. No. 60/057,635 filed on 05-Sep-1997, U.S. Appln. No. 60/048,896 filed on 06-Jun-1997, U.S. Appln. No. 60/057,627 filed on 05-Sep-1997, U.S. Appln. No. 60/049,020

filed on 06-Jun-1997, U.S. Appln. No. 60/057,667 filed on 05-Sep-1997, U.S. Appln. No. 60/048,876 filed on 06-Jun-1997, U.S. Appln. No. 60/057,666 filed on 05-Sep-1997, U.S. Appln. No. 60/048,895 filed on 06-Jun-1997, U.S. Appln. No. 60/057,764 filed on 05-Sep-1997, U.S. Appln. No. 60/048,884 filed on 06-Jun-1997, U.S. Appln. No. 60/057,643 filed on 05-Sep-1997, 5 U.S. Appln. No. 60/048,894 filed on 06-Jun-1997, U.S. Appln. No. 60/057,769 filed on 05-Sep-1997, U.S. Appln. No. 60/048,971 filed on 06-Jun-1997, U.S. Appln. No. 60/057,763 filed on 05-Sep-1997, U.S. Appln. No. 60/048,964 filed on 06-Jun-1997, U.S. Appln. No. 60/057,650 filed on 05-Sep-1997, U.S. Appln. No. 60/048,882 filed on 06-Jun-1997, U.S. Appln. No. 60/057,584 filed on 05-Sep-1997, U.S. Appln. No. 60/048,899 filed on 06-Jun-1997, U.S. Appln. No. 60/057,647 10 filed on 05-Sep-1997, U.S. Appln. No. 60/048,893 filed on 06-Jun-1997, U.S. Appln. No. 60/057,661 filed on 05-Sep-1997, U.S. Appln. No. 60/048,900 filed on 06-Jun-1997, U.S. Appln. No. 60/057,662 filed on 05-Sep-1997, U.S. Appln. No. 60/048,901 filed on 06-Jun-1997, U.S. Appln. No. 60/057,646 filed on 05-Sep-1997, U.S. Appln. No. 60/048,892 filed on 06-Jun-1997, U.S. Appln. No. 60/057,654 filed on 05-Sep-1997, U.S. Appln. No. 60/048,915 filed on 06-Jun- 15 1997, U.S. Appln. No. 60/057,651 filed on 05-Sep-1997, U.S. Appln. No. 60/049,019 filed on 06-Jun-1997, U.S. Appln. No. 60/057,644 filed on 05-Sep-1997, U.S. Appln. No. 60/048,970 filed on 06-Jun-1997, U.S. Appln. No. 60/057,765 filed on 05-Sep-1997, U.S. Appln. No. 60/048,972 filed on 06-Jun-1997, U.S. Appln. No. 60/057,762 filed on 05-Sep-1997, U.S. Appln. No. 60/048,916 filed on 06-Jun-1997, U.S. Appln. No. 60/057,775 filed on 05-Sep-1997, U.S. Appln. No. 20 60/049,373 filed on 06-Jun-1997, U.S. Appln. No. 60/057,648 filed on 05-Sep-1997, U.S. Appln. No. 60/048,875 filed on 06-Jun-1997, U.S. Appln. No. 60/057,774 filed on 05-Sep-1997, U.S. Appln. No. 60/049,374 filed on 06-Jun-1997, U.S. Appln. No. 60/057,649 filed on 05-Sep-1997, U.S. Appln. No. 60/048,917 filed on 06-Jun-1997, U.S. Appln. No. 60/057,770 filed on 05-Sep-1997, U.S. Appln. No. 60/048,949 filed on 06-Jun-1997, U.S. Appln. No. 60/057,771 filed on 05- 25 Sep-1997, U.S. Appln. No. 60/048,974 filed on 06-Jun-1997, U.S. Appln. No. 60/057,761 filed on 05-Sep-1997, U.S. Appln. No. 60/048,883 filed on 06-Jun-1997, U.S. Appln. No. 60/057,760 filed on 05-Sep-1997, U.S. Appln. No. 60/048,897 filed on 06-Jun-1997, U.S. Appln. No. 60/057,776 filed on 05-Sep-1997, U.S. Appln. No. 60/048,898 filed on 06-Jun-1997, U.S. Appln. No. 60/057,778 filed on 05-Sep-1997, U.S. Appln. No. 60/048,962 filed on 06-Jun-1997, U.S. Appln. 30 No. 60/057,629 filed on 05-Sep-1997, U.S. Appln. No. 60/048,963 filed on 06-Jun-1997, U.S. Appln. No. 60/057,628 filed on 05-Sep-1997, U.S. Appln. No. 60/048,877 filed on 06-Jun-1997, U.S. Appln. No. 60/057,777 filed on 05-Sep-1997, U.S. Appln. No. 60/048,878 filed on 06-Jun-1997, U.S. Appln. No. 60/057,634 filed on 05-Sep-1997, U.S. Appln. No. 60/049,608 filed on 13-Jun-1997, U.S. Appln. No. 60/058,669 filed on 12-Sep-1997, U.S. Appln. No. 60/049,566 filed on 35 13-Jun-1997, U.S. Appln. No. 60/058,668 filed on 12-Sep-1997, U.S. Appln. No. 60/052,989 filed

on 13-Jun-1997, U.S. Appln. No. 60/058,750 filed on 12-Sep-1997, U.S. Appln. No. 60/049,607
filed on 13-Jun-1997, U.S. Appln. No. 60/058,665 filed on 12-Sep-1997, U.S. Appln. No.
60/049,611 filed on 13-Jun-1997, U.S. Appln. No. 60/058,971 filed on 12-Sep-1997, U.S. Appln.
No. 60/050,901 filed on 13-Jun-1997, U.S. Appln. No. 60/058,972 filed on 12-Sep-1997, U.S.
5 Appln. No. 60/049,609 filed on 13-Jun-1997, U.S. Appln. No. 60/058,975 filed on 12-Sep-1997,
U.S. Appln. No. 60/048,356 filed on 30-May-1997, U.S. Appln. No. 60/056,296 filed on 29-Aug-
1997, U.S. Appln. No. 60/048,101 filed on 30-May-1997, U.S. Appln. No. 60/056,293 filed on 29-
Aug-1997, U.S. Appln. No. 60/050,935 filed on 30-May-1997, U.S. Appln. No. 60/056,250 filed
on 29-Aug-1997, U.S. Appln. No. 60/049,610 filed on 13-Jun-1997, U.S. Appln. No. 60/061,060
10 filed on 02-Oct-1997, U.S. Appln. No. 60/049,606 filed on 13-Jun-1997, U.S. Appln. No.
60/060,841 filed on 02-Oct-1997, U.S. Appln. No. 60/049,550 filed on 13-Jun-1997, U.S. Appln.
No. 60/060,834 filed on 02-Oct-1997, U.S. Appln. No. 60/049,549 filed on 13-Jun-1997, U.S.
Appln. No. 60/060,865 filed on 02-Oct-1997, U.S. Appln. No. 60/049,548 filed on 13-Jun-1997,
U.S. Appln. No. 60/060,844 filed on 02-Oct-1997, U.S. Appln. No. 60/049,547 filed on 13-Jun-
15 1997, U.S. Appln. No. 60/061,059 filed on 02-Oct-1997, U.S. Appln. No. 60/051,381 filed on 01-
Jul-1997, U.S. Appln. No. 60/058,598 filed on 12-Sep-1997, U.S. Appln. No. 60/051,480 filed on
01-Jul-1997, U.S. Appln. No. 60/058,663 filed on 12-Sep-1997, U.S. Appln. No. 60/051,926 filed
on 08-Jul-1997, U.S. Appln. No. 60/058,785 filed on 12-Sep-1997, U.S. Appln. No. 60/052,793
filed on 08-Jul-1997, U.S. Appln. No. 60/058,664 filed on 12-Sep-1997, U.S. Appln. No.
20 60/051,925 filed on 08-Jul-1997, U.S. Appln. No. 60/058,660 filed on 12-Sep-1997, U.S. Appln.
No. 60/051,929 filed on 08-Jul-1997, U.S. Appln. No. 60/058,661 filed on 12-Sep-1997, U.S.
Appln. No. 60/052,803 filed on 08-Jul-1997, U.S. Appln. No. 60/055,722 filed on 18-Aug-1997,
U.S. Appln. No. 60/052,732 filed on 08-Jul-1997, U.S. Appln. No. 60/055,723 filed on 18-Aug-
1997, U.S. Appln. No. 60/051,932 filed on 08-Jul-1997, U.S. Appln. No. 60/055,948 filed on 18-
25 Aug-1997, U.S. Appln. No. 60/051,931 filed on 08-Jul-1997, U.S. Appln. No. 60/055,949 filed on
18-Aug-1997, U.S. Appln. No. 60/051,916 filed on 08-Jul-1997, U.S. Appln. No. 60/055,953 filed
on 18-Aug-1997, U.S. Appln. No. 60/051,930 filed on 08-Jul-1997, U.S. Appln. No. 60/055,950
filed on 18-Aug-1997, U.S. Appln. No. 60/051,918 filed on 08-Jul-1997, U.S. Appln. No.
60/055,947 filed on 18-Aug-1997, U.S. Appln. No. 60/051,920 filed on 08-Jul-1997, U.S. Appln.
30 No. 60/055,964 filed on 18-Aug-1997, U.S. Appln. No. 60/052,733 filed on 08-Jul-1997, U.S.
Appln. No. 60/056,360 filed on 18-Aug-1997, U.S. Appln. No. 60/052,795 filed on 08-Jul-1997,
U.S. Appln. No. 60/055,684 filed on 18-Aug-1997, U.S. Appln. No. 60/051,919 filed on 08-Jul-
1997, U.S. Appln. No. 60/055,984 filed on 18-Aug-1997, U.S. Appln. No. 60/051,928 filed on 08-
Jul-1997, U.S. Appln. No. 60/055,954 filed on 18-Aug-1997, U.S. Appln. No. 60/052,870 filed on
35 16-Jul-1997, U.S. Appln. No. 60/055,952 filed on 18-Aug-1997, U.S. Appln. No. 60/052,871 filed

on 16-Jul-1997, U.S. Appln. No. 60/055,725 filed on 18-Aug-1997, U.S. Appln. No. 60/052,872
filed on 16-Jul-1997, U.S. Appln. No. 60/056,359 filed on 18-Aug-1997, U.S. Appln. No.
60/052,661 filed on 16-Jul-1997, U.S. Appln. No. 60/055,985 filed on 18-Aug-1997, U.S. Appln.
No. 60/052,874 filed on 16-Jul-1997, U.S. Appln. No. 60/055,724 filed on 18-Aug-1997, U.S.
5 Appln. No. 60/052,873 filed on 16-Jul-1997, U.S. Appln. No. 60/055,726 filed on 18-Aug-1997,
U.S. Appln. No. 60/052,875 filed on 16-Jul-1997, U.S. Appln. No. 60/056,361 filed on 18-Aug-
1997, U.S. Appln. No. 60/053,440 filed on 22-Jul-1997, U.S. Appln. No. 60/055,989 filed on 18-
Aug-1997, U.S. Appln. No. 60/053,441 filed on 22-Jul-1997, U.S. Appln. No. 60/055,946 filed on
18-Aug-1997, U.S. Appln. No. 60/053,442 filed on 22-Jul-1997, U.S. Appln. No. 60/055,683 filed
10 on 18-Aug-1997, U.S. Appln. No. 60/054,212 filed on 30-Jul-1997, U.S. Appln. No. 60/055,968
filed on 18-Aug-1997, U.S. Appln. No. 60/054,209 filed on 30-Jul-1997, U.S. Appln. No.
60/055,972 filed on 18-Aug-1997, U.S. Appln. No. 60/054,234 filed on 30-Jul-1997, U.S. Appln.
No. 60/055,969 filed on 18-Aug-1997, U.S. Appln. No. 60/055,386 filed on 05-Aug-1997, U.S.
Appln. No. 60/055,986 filed on 18-Aug-1997, U.S. Appln. No. 60/054,807 filed on 05-Aug-1997,
15 U.S. Appln. No. 60/055,970 filed on 18-Aug-1997, U.S. Appln. No. 60/054,215 filed on 30-Jul-
1997, U.S. Appln. No. 60/056,543 filed on 19-Aug-1997, U.S. Appln. No. 60/054,218 filed on 30-
Jul-1997, U.S. Appln. No. 60/056,561 filed on 19-Aug-1997, U.S. Appln. No. 60/054,214 filed on
30-Jul-1997, U.S. Appln. No. 60/056,534 filed on 19-Aug-1997, U.S. Appln. No. 60/054,236 filed
on 30-Jul-1997, U.S. Appln. No. 60/056,729 filed on 19-Aug-1997, U.S. Appln. No. 60/054,213
20 filed on 30-Jul-1997, U.S. Appln. No. 60/056,727 filed on 19-Aug-1997, U.S. Appln. No.
60/054,211 filed on 30-Jul-1997, U.S. Appln. No. 60/056,554 filed on 19-Aug-1997, U.S. Appln.
No. 60/054,217 filed on 30-Jul-1997, U.S. Appln. No. 60/056,730 filed on 19-Aug-1997, U.S.
Appln. No. 60/055,312 filed on 05-Aug-1997, U.S. Appln. No. 60/056,563 filed on 19-Aug-1997,
U.S. Appln. No. 60/055,309 filed on 05-Aug-1997, U.S. Appln. No. 60/056,557 filed on 19-Aug-
25 1997, U.S. Appln. No. 60/055,310 filed on 05-Aug-1997, U.S. Appln. No. 60/056,371 filed on 19-
Aug-1997, U.S. Appln. No. 60/054,798 filed on 05-Aug-1997, U.S. Appln. No. 60/056,732 filed
on 19-Aug-1997, U.S. Appln. No. 60/056,369 filed on 19-Aug-1997, U.S. Appln. No. 60/056,535
filed on 19-Aug-1997, U.S. Appln. No. 60/056,556 filed on 19-Aug-1997, U.S. Appln. No.
60/056,555 filed on 19-Aug-1997, U.S. Appln. No. 60/054,806 filed on 05-Aug-1997, U.S. Appln.
30 No. 60/056,366 filed on 19-Aug-1997, U.S. Appln. No. 60/054,809 filed on 05-Aug-1997, U.S.
Appln. No. 60/056,364 filed on 19-Aug-1997, U.S. Appln. No. 60/054,804 filed on 05-Aug-1997,
U.S. Appln. No. 60/056,370 filed on 19-Aug-1997, U.S. Appln. No. 60/054,803 filed on 05-Aug-
1997, U.S. Appln. No. 60/056,731 filed on 19-Aug-1997, U.S. Appln. No. 60/055,311 filed on 05-
Aug-1997, U.S. Appln. No. 60/056,365 filed on 19-Aug-1997, U.S. Appln. No. 60/054,808 filed
35 on 05-Aug-1997, U.S. Appln. No. 60/056,367 filed on 19-Aug-1997, U.S. Appln. No. 60/056,726

filed on 19-Aug-1997, U.S. Appln. No. 60/056,368 filed on 19-Aug-1997, U.S. Appln. No. 60/056,728 filed on 19-Aug-1997, U.S. Appln. No. 60/056,628 filed on 19-Aug-1997, U.S. Appln. No. 60/056,629 filed on 19-Aug-1997, U.S. Appln. No. 60/056,270 filed on 29-Aug-1997, U.S. Appln. No. 60/056,271 filed on 29-Aug-1997, U.S. Appln. No. 60/056,247 filed on 29-Aug-1997, 5 U.S. Appln. No. 60/056,073 filed on 29-Aug-1997, U.S. Appln. No. 60/057,669 filed on 05-Sep-1997, U.S. Appln. No. 60/057,663 filed on 05-Sep-1997, U.S. Appln. No. 60/057,626 filed on 05-Sep-1997, U.S. Appln. No. 60/058,666 filed on 12-Sep-1997, U.S. Appln. No. 60/058,973 filed on 12-Sep-1997, U.S. Appln. No. 60/058,974 filed on 12-Sep-1997, U.S. Appln. No. 60/058,667 filed on 12-Sep-1997, U.S. Appln. No. 60/060,837 filed on 02-Oct-1997, U.S. Appln. No. 60/060,862 10 filed on 02-Oct-1997, U.S. Appln. No. 60/060,839 filed on 02-Oct-1997, U.S. Appln. No. 60/060,866 filed on 02-Oct-1997, U.S. Appln. No. 60/060,843 filed on 02-Oct-1997, U.S. Appln. No. 60/060,836 filed on 02-Oct-1997, U.S. Appln. No. 60/060,838 filed on 02-Oct-1997, U.S. Appln. No. 60/060,874 filed on 02-Oct-1997, U.S. Appln. No. 60/060,833 filed on 02-Oct-1997, U.S. Appln. No. 60/060,884 filed on 02-Oct-1997, U.S. Appln. No. 60/060,880 filed on 02-Oct- 15 1997, U.S. Appln. No. 60/061,463 filed on 09-Oct-1997, U.S. Appln. No. 60/061,529 filed on 09-Oct-1997, U.S. Appln. No. 60/071,498 filed on 09-Oct-1997, U.S. Appln. No. 60/061,527 filed on 09-Oct-1997, U.S. Appln. No. 60/061,536 filed on 09-Oct-1997, U.S. Appln. No. 60/061,532 filed on 09-Oct-1997, U.S. Appln. No. 60/063,099 filed on 24-Oct-1997, U.S. Appln. No. 60/063,088 filed on 24-Oct-1997, U.S. Appln. No. 60/063,100 filed on 24-Oct-1997, U.S. Appln. No. 20 60/063,387 filed on 24-Oct-1997, U.S. Appln. No. 60/063,148 filed on 24-Oct-1997, U.S. Appln. No. 60/063,386 filed on 24-Oct-1997, U.S. Appln. No. 60/062,784 filed on 24-Oct-1997, U.S. Appln. No. 60/063,091 filed on 24-Oct-1997, U.S. Appln. No. 60/063,090 filed on 24-Oct-1997, U.S. Appln. No. 60/063,089 filed on 24-Oct-1997, U.S. Appln. No. 60/063,092 filed on 24-Oct- 25 1997, U.S. Appln. No. 60/063,111 filed on 24-Oct-1997, U.S. Appln. No. 60/063,101 filed on 24-Oct-1997, U.S. Appln. No. 60/063,109 filed on 24-Oct-1997, U.S. Appln. No. 60/063,110 filed on 24-Oct-1997, U.S. Appln. No. 60/063,098 filed on 24-Oct-1997, U.S. Appln. No. 60/063,097 filed on 24-Oct-1997, U.S. Appln. No. 60/064,911 filed on 07-Nov-1997, U.S. Appln. No. 60/064,912 filed on 07-Nov-1997, U.S. Appln. No. 60/064,983 filed on 07-Nov-1997, U.S. Appln. No. 60/064,900 filed on 07-Nov-1997, U.S. Appln. No. 60/064,988 filed on 07-Nov-1997, U.S. Appln. 30 No. 60/064,987 filed on 07-Nov-1997, U.S. Appln. No. 60/064,908 filed on 07-Nov-1997, U.S. Appln. No. 60/064,984 filed on 07-Nov-1997, U.S. Appln. No. 60/064,985 filed on 07-Nov-1997, U.S. Appln. No. 60/066,094 filed on 17-Nov-1997, U.S. Appln. No. 60/066,100 filed on 17-Nov-1997, U.S. Appln. No. 60/066,089 filed on 17-Nov-1997, U.S. Appln. No. 60/066,095 filed on 17-Nov-1997, U.S. Appln. No. 60/066,090 filed on 17-Nov-1997, U.S. Appln. No. 60/068,006 filed 35 on 18-Dec-1997, U.S. Appln. No. 60/068,057 filed on 18-Dec-1997, U.S. Appln. No. 60/068,007

filed on 18-Dec-1997, U.S. Appln. No. 60/068,008 filed on 18-Dec-1997, U.S. Appln. No. 60/068,054 filed on 18-Dec-1997, U.S. Appln. No. 60/068,064 filed on 18-Dec-1997, U.S. Appln. No. 60/068,053 filed on 18-Dec-1997, U.S. Appln. No. 60/070,923 filed on 18-Dec-1997, U.S. Appln. No. 60/068,365 filed on 19-Dec-1997, U.S. Appln. No. 60/068,169 filed on 19-Dec-1997, 5 U.S. Appln. No. 60/068,367 filed on 19-Dec-1997, U.S. Appln. No. 60/068,369 filed on 19-Dec-1997, U.S. Appln. No. 60/068,368 filed on 19-Dec-1997, U.S. Appln. No. 60/070,657 filed on 07-Jan-1998, U.S. Appln. No. 60/070,692 filed on 07-Jan-1998, U.S. Appln. No. 60/070,704 filed on 07-Jan-1998, U.S. Appln. No. 60/070,658 filed on 07-Jan-1998, U.S. Appln. No. 60/073,160 filed on 30-Jan-1998, U.S. Appln. No. 60/073,159 filed on 30-Jan-1998, U.S. Appln. No. 60/073,165 10 filed on 30-Jan-1998, U.S. Appln. No. 60/073,164 filed on 30-Jan-1998, U.S. Appln. No. 60/073,167 filed on 30-Jan-1998, U.S. Appln. No. 60/073,162 filed on 30-Jan-1998, U.S. Appln. No. 60/073,161 filed on 30-Jan-1998, U.S. Appln. No. 60/073,170 filed on 30-Jan-1998, U.S. Appln. No. 60/074,141 filed on 09-Feb-1998, U.S. Appln. No. 60/074,341 filed on 09-Feb-1998, U.S. Appln. No. 60/074,037 filed on 09-Feb-1998, U.S. Appln. No. 60/074,157 filed on 09-Feb- 15 1998, U.S. Appln. No. 60/074,118 filed on 09-Feb-1998, U.S. Appln. No. 60/076,051 filed on 26-Feb-1998, U.S. Appln. No. 60/076,053 filed on 26-Feb-1998, U.S. Appln. No. 60/076,054 filed on 26-Feb-1998, U.S. Appln. No. 60/076,052 filed on 26-Feb-1998, U.S. Appln. No. 60/076,057 filed on 26-Feb-1998, U.S. Appln. No. 60/077,714 filed on 12-Mar-1998, U.S. Appln. No. 60/077,687 filed on 12-Mar-1998, U.S. Appln. No. 60/077,686 filed on 12-Mar-1998, U.S. Appln. No. 20 60/077,696 filed on 12-Mar-1998, U.S. Appln. No. 60/078,566 filed on 19-Mar-1998, U.S. Appln. No. 60/078,574 filed on 19-Mar-1998, U.S. Appln. No. 60/078,576 filed on 19-Mar-1998, U.S. Appln. No. 60/078,579 filed on 19-Mar-1998, U.S. Appln. No. 60/078,563 filed on 19-Mar-1998, U.S. Appln. No. 60/078,573 filed on 19-Mar-1998, U.S. Appln. No. 60/078,578 filed on 19-Mar- 25 1998, U.S. Appln. No. 60/078,581 filed on 19-Mar-1998, U.S. Appln. No. 60/078,577 filed on 19-Mar-1998, U.S. Appln. No. 60/080,314 filed on 01-Apr-1998, U.S. Appln. No. 60/080,312 filed on 01-Apr-1998, U.S. Appln. No. 60/080,313 filed on 01-Apr-1998, U.S. Appln. No. 60/085,180 filed on 12-May-1998, U.S. Appln. No. 60/085,105 filed on 12-May-1998, U.S. Appln. No. 60/085,094 filed on 12-May-1998, U.S. Appln. No. 60/085,093 filed on 12-May-1998, U.S. Appln. No. 60/085,924 filed on 18-May-1998, U.S. Appln. No. 60/085,906 filed on 18-May-1998, U.S. 30 Appln. No. 60/085,927 filed on 18-May-1998, U.S. Appln. No. 60/085,920 filed on 18-May-1998, U.S. Appln. No. 60/085,928 filed on 18-May-1998, U.S. Appln. No. 60/085,925 filed on 18-May-1998, U.S. Appln. No. 60/085,921 filed on 18-May-1998, U.S. Appln. No. 60/085,923 filed on 18-May-1998, U.S. Appln. No. 60/085,922 filed on 18-May-1998, U.S. Appln. No. 60/090,112 filed on 22-Jun-1998, U.S. Appln. No. 60/089,508 filed on 16-Jun-1998, U.S. Appln. No. 60/089,507 35 filed on 16-Jun-1998, U.S. Appln. No. 60/089,510 filed on 16-Jun-1998, U.S. Appln. No.

60/089,509 filed on 16-Jun-1998, U.S. Appln. No. 60/090,113 filed on 22-Jun-1998, U.S. Appln. No. 60/092,956 filed on 15-Jul-1998, U.S. Appln. No. 60/092,921 filed on 15-Jul-1998, U.S. Appln. No. 60/092,922 filed on 15-Jul-1998, U.S. Appln. No. 60/094,657 filed on 30-Jul-1998, U.S. Appln. No. 60/095,486 filed on 05-Aug-1998, U.S. Appln. No. 60/096,319 filed on 12-Aug-1998, U.S. Appln. No. 60/095,455 filed on 06-Aug-1998, U.S. Appln. No. 60/095,454 filed on 06-Aug-1998, U.S. Appln. No. 60/097,917 filed on 25-Aug-1998, U.S. Appln. No. 60/098,634 filed on 31-Aug-1998, U.S. Appln. No. 60/101,546 filed on 23-Sep-1998, U.S. Appln. No. 60/102,895 filed on 02-Oct-1998, U.S. Appln. No. 60/108,207 filed on 12-Nov-1998, U.S. Appln. No. 60/113,006 filed on 18-Dec-1998, U.S. Appln. No. 60/112,809 filed on 17-Dec-1998, U.S. Appln. No. 60/116,330 filed on 19-Jan-1999, U.S. Appln. No. 60/119,468 filed on 10-Feb-1999, U.S. Appln. No. 60/125,055 filed on 18-Mar-1999, U.S. Appln. No. 60/128,693 filed on 09-Apr-1999, U.S. Appln. No. 60/130,991 filed on 26-Apr-1999, U.S. Appln. No. 60/137,725 filed on 07-Jun-1999, U.S. Appln. No. 60/145,220 filed on 23-Jul-1999, U.S. Appln. No. 60/149,182 filed on 17-Aug-1999, U.S. Appln. No. 60/152,317 filed on 03-Sep-1999, U.S. Appln. No. 60/152,315 filed on 03-Sep-1999, U.S. Appln. No. 60/155,709 filed on 24-Sep-1999, U.S. Appln. No. 60/163,085 filed on 02-Nov-1999, U.S. Appln. No. 60/172,411 filed on 17-Dec-1999, U.S. Appln. No. 60/162,239 filed on 29-Oct-1999, U.S. Appln. No. 60/215,139 filed on 30-Jun-2000, U.S. Appln. No. 60/162,211 filed on 29-Oct-1999, U.S. Appln. No. 60/215,138 filed on 30-Jun-2000, U.S. Appln. No. 60/162,240 filed on 29-Oct-1999, U.S. Appln. No. 60/215,131 filed on 30-Jun-2000, U.S. Appln. No. 60/162,237 filed on 29-Oct-1999, U.S. Appln. No. 60/219,666 filed on 21-Jul-2000, U.S. Appln. No. 60/162,238 filed on 29-Oct-1999, U.S. Appln. No. 60/215,134 filed on 30-Jun-2000, U.S. Appln. No. 60/163,580 filed on 05-Nov-1999, U.S. Appln. No. 60/215,130 filed on 30-Jun-2000, U.S. Appln. No. 60/163,577 filed on 05-Nov-1999, U.S. Appln. No. 60/215,137 filed on 30-Jun-2000, U.S. Appln. No. 60/163,581 filed on 05-Nov-1999, U.S. Appln. No. 60/215,133 filed on 30-Jun-2000, U.S. Appln. No. 60/163,576 filed on 05-Nov-1999, U.S. Appln. No. 60/221,366 filed on 27-Jul-2000, U.S. Appln. No. 60/164,344 filed on 09-Nov-1999, U.S. Appln. No. 60/195,296 filed on 07-Apr-2000, U.S. Appln. No. 60/221,367 filed on 27-Jul-2000, U.S. Appln. No. 60/164,835 filed on 12-Nov-1999, U.S. Appln. No. 60/221,142 filed on 27-Jul-2000, U.S. Appln. No. 60/164,744 filed on 12-Nov-1999, U.S. Appln. No. 60/215,140 filed on 30-Jun-2000, U.S. Appln. No. 60/164,735 filed on 12-Nov-1999, U.S. Appln. No. 60/221,193 filed on 27-Jul-2000, U.S. Appln. No. 60/164,825 filed on 12-Nov-1999, U.S. Appln. No. 60/222,904 filed on 03-Aug-2000, U.S. Appln. No. 60/164,834 filed on 12-Nov-1999, U.S. Appln. No. 60/224,007 filed on 04-Aug-2000, U.S. Appln. No. 60/164,750 filed on 12-Nov-1999, U.S. Appln. No. 60/215,128 filed on 30-Jun-2000, U.S. Appln. No. 60/166,415 filed on 19-Nov-1999, U.S. Appln. No. 60/215,136 filed on 30-Jun-2000, U.S. Appln. No. 60/166,414 filed on 19-Nov-1999, U.S. Appln.

No. 60/219,665 filed on 21-Jul-2000, U.S. Appln. No. 60/164,731 filed on 12-Nov-1999, U.S. Appln. No. 60/215,132 filed on 30-Jun-2000, U.S. Appln. No. 60/226,280 filed on 18-Aug-2000, U.S. Appln. No. 60/256,968 filed on 21-Dec-2000, U.S. Appln. No. 60/226,380 filed on 18-Aug-2000, U.S. Appln. No. 60/259,803 filed on 05-Jan-2001, U.S. Appln. No. 60/228,084 filed on 28-
5 Aug-2000, U.S. Appln. No. 09/915,582 filed on 27-Jul-2001, U.S. Appln. No. 60/231,968 filed on 12-Sep-2000, U.S. Appln. No. 60/236,326 filed on 29-Sep-2000, U.S. Appln. No. 60/234,211 filed on 20-Sep-2000, U.S. Appln. No. 60/226,282 filed on 18-Aug-2000, U.S. Appln. No. 60/232,104 filed on 12-Sep-2000, U.S. Appln. No. 60/234,210 filed on 20-Sep-2000, U.S. Appln. No. 60/226,278 filed on 18-Aug-2000, U.S. Appln. No. 60/259,805 filed on 05-Jan-2001, U.S. Appln. No. 60/226,279 filed on 18-Aug-2000, U.S. Appln. No. 60/259,678 filed on 05-Jan-2001, U.S. Appln. No. 60/226,281 filed on 18-Aug-2000, U.S. Appln. No. 60/231,969 filed on 12-Sep-2000, U.S. Appln. No. 60/228,086 filed on 28-Aug-2000, U.S. Appln. No. 60/259,516 filed on 04-Jan-2001, U.S. Appln. No. 60/228,083 filed on 28-Aug-2000, U.S. Appln. No. 60/259,804 filed on 05-Jan-2001, U.S. Appln. No. 60/270,658 filed on 23-Feb-2001, U.S. Appln. No. 60/304,444 filed on 12-Jul-2001, U.S. Appln. No. 60/270,625 filed on 23-Feb-2001, U.S. Appln. No. 60/304,417 filed on 12-Jul-2001, U.S. Appln. No. 60/295,869 filed on 06-Jun-2001, U.S. Appln. No. 60/304,121 filed on 11-Jul-2001, U.S. Appln. No. 60/311,085 filed on 10-Aug-2001, U.S. Appln. No. 60/325,209 filed on 28-Sep-2001, U.S. Appln. No. 60/330,629 filed on 26-Oct-2001, U.S. Appln. No. 60/331,046 filed on 07-Nov-2001, U.S. Appln. No. 60/358,554 filed on 22-Feb-2002, U.S. Appln. No. 60/358,714 filed on 25-Feb-2002, U.S. Appln. No. 60/277,340 filed on 21-Mar-2001, U.S. Appln. No. 60/306,171 filed on 19-Jul-2001, U.S. Appln. No. 60/278,650 filed on 27-Mar-2001, U.S. Appln. No. 60/331,287 filed on 13-Nov-2001, U.S. Appln. No. 09/950,082 filed on 12-Sep-2001, U.S. Appln. No. 09/950,083 filed on 12-Sep-2001, PCT Appln. No. US00/29363 filed on 25-Oct-2000, PCT Appln. No. US00/29360 filed on 25-Oct-2000, PCT Appln. No. US00/29362 filed on 25-Oct-2000, PCT Appln. No. US00/29365 filed on 25-Oct-2000, PCT Appln. No. US00/29364 filed on 25-Oct-2000, PCT Appln. No. US00/30040 filed on 01-Nov-2000, PCT Appln. No. US00/30037 filed on 01-Nov-2000, PCT Appln. No. US00/30045 filed on 01-Nov-2000, PCT Appln. No. US00/30036 filed on 01-Nov-2000, PCT Appln. No. US00/30039 filed on 01-Nov-2000, PCT Appln. No. US00/30654 filed on 08-Nov-2000, PCT Appln. No. US00/30628 filed on 08-Nov-2000, PCT Appln. No. US00/30653 filed on 08-Nov-2000, PCT Appln. No. US00/30629 filed on 08-Nov-2000, PCT Appln. No. US00/30679 filed on 08-Nov-2000, PCT Appln. No. US00/30674 filed on 08-Nov-2000, PCT Appln. No. US00/31162 filed on 15-Nov-2000, PCT Appln. No. US00/31282 filed on 15-Nov-2000, PCT Appln. No. US00/30657 filed on 08-Nov-2000, PCT Appln. No. US01/01396 filed on 17-Jan-2001, PCT Appln. No. US01/01387 filed on 17-Jan-2001, PCT Appln. No. US01/01567 filed on 17-Jan-2001, PCT

Appln. No. US01/01431 filed on 17-Jan-2001, PCT Appln. No. US01/01432 filed on 17-Jan-2001, PCT Appln. No. US01/00544 filed on 09-Jan-2001, PCT Appln. No. US01/01435 filed on 17-Jan-2001, PCT Appln. No. US01/01386 filed on 17-Jan-2001, PCT Appln. No. US01/01565 filed on 17-Jan-2001, PCT Appln. No. US01/01394 filed on 17-Jan-2001, PCT Appln. No. US01/01434
5 filed on 17-Jan-2001, PCT Appln. No. US01/01397 filed on 17-Jan-2001, PCT Appln. No. US01/01385 filed on 17-Jan-2001, PCT Appln. No. US01/01384 filed on 17-Jan-2001, PCT Appln. No. US01/01383 filed on 17-Jan-2001, PCT Appln. No. (Atty. Dkt. No. PS735; unassigned) filed on 21-Feb-2002, PCT Appln. No. (Atty. Dkt. No. PS736; unassigned) filed on 21-Feb-2002, U.S. Appln. No. 09/148,545 filed on 04-Sep-1998, U.S. Appln. No. 09/621,011 filed
10 on 20-Jul-2000, U.S. Appln. No. 09/981,876 filed on 19-Oct-2001, U.S. Appln. No. 09/149,476 filed on 08-Sep-1998, U.S. Appln. No. 09/809,391 filed on 16-Mar-2001, U.S. Appln. No. 09/882,171 filed on 18-Jun-2001, U.S. Appln. No. 60/190,068 filed on 17-Mar-2000, U.S. Appln. No. 09/152,060 filed on 11-Sep-1998, U.S. Appln. No. 09/852,797 filed on 11-May-2001, U.S. Appln. No. 09/853,161 filed on 11-May-2001, U.S. Appln. No. 09/852,659 filed on 11-May-2001,
15 U.S. Appln. No. 10/058,993 filed on 30-Jan-2002, U.S. Appln. No. 60/265,583 filed on 02-Feb-2001, U.S. Appln. No. 09/154,707 filed on 17-Sep-1998, U.S. Appln. No. 09/966,262 filed on 01-Oct-2001, U.S. Appln. No. 09/983,966 filed on 26-Oct-2001, U.S. Appln. No. 10/059,395 filed on 31-Jan-2002, U.S. Appln. No. 09/984,245 filed on 29-Oct-2001, U.S. Appln. No. 09/166,780 filed on 06-Oct-1998, U.S. Appln. No. 09/577,145 filed on 24-May-2000, U.S. Appln. No. 09/814,122
20 filed on 22-Mar-2001, U.S. Appln. No. 09/189,144 filed on 10-Nov-1998, U.S. Appln. No. 09/690,454 filed on 18-Oct-2000, U.S. Appln. No. (Atty. Dkt. No. PZ006G13A; unassigned) filed on 05-Feb-2002, U.S. Appln. No. 10/062,599 filed on 05-Feb-2002, U.S. Appln. No. 09/205,258 filed on 04-Dec-1998, U.S. Appln. No. 09/933,767 filed on 22-Aug-2001, U.S. Appln. No. 60/184,836 filed on 24-Feb-2000, U.S. Appln. No. 60/193,170 filed on 29-Mar-2000, U.S. Appln.
25 No. 10/023,282 filed on 20-Dec-2001, U.S. Appln. No. 10/004,860 filed on 07-Dec-2001, U.S. Appln. No. 09/209,462 filed on 11-Dec-1998, U.S. Appln. No. 09/213,365 filed on 17-Dec-1998, U.S. Appln. No. 09/627,081 filed on 27-Jul-2000, U.S. Appln. No. 09/227,357 filed on 08-Jan-1999, U.S. Appln. No. 09/983,802 filed on 25-Oct-2001, U.S. Appln. No. 09/973,278 filed on 10-Oct-2001, U.S. Appln. No. 60/239,899 filed on 13-Oct-2000, U.S. Appln. No. 09/984,490 filed on
30 30-Oct-2001, U.S. Appln. No. 09/776,724 filed on 06-Feb-2001, U.S. Appln. No. 09/229,982 filed on 14-Jan-1999, U.S. Appln. No. 09/669,688 filed on 26-Sep-2000, U.S. Appln. No. 60/180,909 filed on 08-Feb-2000, U.S. Appln. No. 09/236,557 filed on 26-Jan-1999, U.S. Appln. No. 09/666,984 filed on 21-Sep-2000, U.S. Appln. No. 09/820,649 filed on 30-Mar-2001, U.S. Appln. No. 60/295,558 filed on 05-Jun-2001, U.S. Appln. No. 09/244,112 filed on 04-Feb-1999, U.S.
35 Appln. No. 09/774,639 filed on 01-Feb-2001, U.S. Appln. No. 09/969,730 filed on 04-Oct-2001,

U.S. Appln. No. 60/238,291 filed on 06-Oct-2000, U.S. Appln. No. 09/251,329 filed on 17-Feb-1999, U.S. Appln. No. 09/716,128 filed on 17-Nov-2000, U.S. Appln. No. 09/257,179 filed on 25-Feb-1999, U.S. Appln. No. 09/729,835 filed on 06-Dec-2000, U.S. Appln. No. 09/262,109 filed on 04-Mar-1999, U.S. Appln. No. 09/722,329 filed on 28-Nov-2000, U.S. Appln. No. (Atty. Dkt. No. 5 PZ016P1C1; unassigned) filed on 17-Jan-2002, U.S. Appln. No. 60/262,066 filed on 18-Jan-2001, U.S. Appln. No. 09/281,976 filed on 31-Mar-1999, U.S. Appln. No. 09/288,143 filed on 08-Apr-1999, U.S. Appln. No. 09/984,429 filed on 30-Oct-2001, U.S. Appln. No. 60/244,591 filed on 01-Nov-2000, U.S. Appln. No. 09/296,622 filed on 23-Apr-1999, U.S. Appln. No. 09/305,736 filed on 05-May-1999, U.S. Appln. No. 09/818,683 filed on 28-Mar-2001, U.S. Appln. No. 09/974,879 10 filed on 12-Oct-2001, U.S. Appln. No. 60/239,893 filed on 13-Oct-2000, U.S. Appln. No. 09/334,595 filed on 17-Jun-1999, U.S. Appln. No. 09/348,457 filed on 07-Jul-1999, U.S. Appln. No. 09/739,907 filed on 20-Dec-2000, U.S. Appln. No. 09/938,671 filed on 27-Aug-2001, U.S. Appln. No. 09/363,044 filed on 29-Jul-1999, U.S. Appln. No. 09/813,153 filed on 21-Mar-2001, U.S. Appln. No. 09/949,925 filed on 12-Sep-2001, U.S. Appln. No. 60/232,150 filed on 12-Sep-15 2000, U.S. Appln. No. 09/369,247 filed on 05-Aug-1999, U.S. Appln. No. 10/062,548 filed on 05-Feb-2002, U.S. Appln. No. 09/382,572 filed on 25-Aug-1999, U.S. Appln. No. 09/716,129 filed on 17-Nov-2000, U.S. Appln. No. 09/393,022 filed on 09-Sep-1999, U.S. Appln. No. 09/798,889 filed on 06-Mar-2001, U.S. Appln. No. 09/397,945 filed on 17-Sep-1999, U.S. Appln. No. 09/437,658 filed on 10-Nov-1999, U.S. Appln. No. 09/892,877 filed on 28-Jun-2001, U.S. Appln. 20 No. 09/948,783 filed on 10-Sep-2001, U.S. Appln. No. 60/231,846 filed on 11-Sep-2000, U.S. Appln. No. 09/461,325 filed on 14-Dec-1999, U.S. Appln. No. 10/050,873 filed on 18-Jan-2002, U.S. Appln. No. 60/263,230 filed on 23-Jan-2001, U.S. Appln. No. 60/263,681 filed on 24-Jan-2001, U.S. Appln. No. 10/012,542 filed on 12-Dec-2001, U.S. Appln. No. 09/482,273 filed on 13-Jan-2000, U.S. Appln. No. 60/234,925 filed on 25-Sep-2000, U.S. Appln. No. 09/984,276 filed on 25 29-Oct-2001, U.S. Appln. No. 09/984,271 filed on 29-Oct-2001, U.S. Appln. No. 09/489,847 filed on 24-Jan-2000, U.S. Appln. No. 60/350,898 filed on 25-Jan-2002, U.S. Appln. No. 09/511,554 filed on 23-Feb-2000, U.S. Appln. No. 09/739,254 filed on 19-Dec-2000, U.S. Appln. No. 09/904,615 filed on 16-Jul-2001, U.S. Appln. No. 10/054,988 filed on 25-Jan-2002, U.S. Appln. No. 09/531,119 filed on 20-Mar-2000, U.S. Appln. No. 09/820,893 filed on 30-Mar-2001, U.S. 30 Appln. No. 09/565,391 filed on 05-May-2000, U.S. Appln. No. 09/948,820 filed on 10-Sep-2001, U.S. Appln. No. 09/591,316 filed on 09-Jun-2000, U.S. Appln. No. 09/895,298 filed on 02-Jul-2001, U.S. Appln. No. 09/618,150 filed on 17-Jul-2000, U.S. Appln. No. 09/985,153 filed on 01-Nov-2001, U.S. Appln. No. 09/628,508 filed on 28-Jul-2000, U.S. Appln. No. 09/997,131 filed on 30-Nov-2001, U.S. Appln. No. 09/661,453 filed on 13-Sep-2000, U.S. Appln. No. 10/050,882 35 filed on 18-Jan-2002, U.S. Appln. No. 09/684,524 filed on 10-Oct-2000, U.S. Appln. No.

10/050,704 filed on 18-Jan-2002, U.S. Appln. No. 09/726,643 filed on 01-Dec-2000, U.S. Appln. No. 10/042,141 filed on 11-Jan-2002, U.S. Appln. No. 09/756,168 filed on 09-Jan-2001, U.S. Appln. No. 09/781,417 filed on 13-Feb-2001, U.S. Appln. No. (Atty. Dkt. No. PZ042P1C1; unassigned) filed on 01-Feb-2002, U.S. Appln. No. 09/789,561 filed on 22-Feb-2001, U.S. Appln. No. 09/800,729 filed on 08-Mar-2001, U.S. Appln. No. 09/832,129 filed on 11-Apr-2001, PCT Appln. No.US98/04482 filed on 06-Mar-1998, PCT Appln. No.US98/04493 filed on 06-Mar-1998, PCT Appln. No.US98/04858 filed on 12-Mar-1998, PCT Appln. No.US98/05311 filed on 19-Mar-1998, PCT Appln. No.US98/06801 filed on 07-Apr-1998, PCT Appln. No.US98/10868 filed on 28-May-1998, PCT Appln. No.US98/11422 filed on 04-Jun-1998, PCT Appln. No.US01/05614 filed on 21-Feb-2001, PCT Appln. No.US98/12125 filed on 11-Jun-1998, PCT Appln. No.US98/13608 filed on 30-Jun-1998, PCT Appln. No.US98/13684 filed on 07-Jul-1998, PCT Appln. No.US98/14613 filed on 15-Jul-1998, PCT Appln. No.US98/15949 filed on 29-Jul-1998, PCT Appln. No.US98/16235 filed on 04-Aug-1998, PCT Appln. No.US98/17044 filed on 18-Aug-1998, PCT Appln. No.US98/17709 filed on 27-Aug-1998, PCT Appln. No.US98/18360 filed on 03-Sep-1998, PCT Appln. No.(Atty. Dkt. No. PZ016PCT2; unassigned) filed on 17-Jan-2002, PCT Appln. No.US98/20775 filed on 01-Oct-1998, PCT Appln. No.US98/21142 filed on 08-Oct-1998, PCT Appln. No.US98/22376 filed on 23-Oct-1998, PCT Appln. No.US98/23435 filed on 04-Nov-1998, PCT Appln. No.US98/27059 filed on 17-Dec-1998, PCT Appln. No.US99/00108 filed on 06-Jan-1999, PCT Appln. No.US99/01621 filed on 27-Jan-1999, PCT Appln. No.US99/02293 filed on 04-Feb-1999, PCT Appln. No.US99/03939 filed on 24-Feb-1999, PCT Appln. No.US99/05721 filed on 11-Mar-1999, PCT Appln. No.US99/05804 filed on 18-Mar-1999, PCT Appln. No.US99/09847 filed on 06-May-1999, PCT Appln. No.US99/13418 filed on 15-Jun-1999, PCT Appln. No.US99/15849 filed on 14-Jul-1999, PCT Appln. No.US01/00911 filed on 12-Jan-2001, PCT Appln. No.US01/29871 filed on 24-Sep-2001, PCT Appln. No.US99/17130 filed on 29-Jul-1999, PCT Appln. No.US99/19330 filed on 24-Aug-1999, PCT Appln. No.US99/22012 filed on 22-Sep-1999, PCT Appln. No.US99/26409 filed on 09-Nov-1999, PCT Appln. No.US99/29950 filed on 16-Dec-1999, PCT Appln. No.US00/00903 filed on 18-Jan-2000, PCT Appln. No.US00/03062 filed on 08-Feb-2000, PCT Appln. No.US00/06783 filed on 16-Mar-2000, PCT Appln. No.US00/08979 filed on 06-Apr-2000, PCT Appln. No.US00/15187 filed on 02-Jun-2000, PCT Appln. No.US00/19735 filed on 20-Jul-2000, PCT Appln. No.US00/22325 filed on 16-Aug-2000, PCT Appln. No.US00/24008 filed on 31-Aug-2000, PCT Appln. No.US00/26013 filed on 22-Sep-2000, PCT Appln. No.US00/28664 filed on 17-Oct-2000, US Appln. No. 09/833,245 filed on 12-Apr-2001, and PCT Appln. No. US01/11988 filed on 12-Apr-2001.

Applicant's File	International Application
Reference Number: PS906PCT	Number: Unassigned

INDICATIONS RELATING TO DEPOSITED BIOLOGICAL MATERIAL

(PCT Rule 13bis)

A. The indications made below relate to the deposited biological material referred to in Table 1A of the description.

B. **IDENTIFICATION OF DEPOSIT:**

Further deposits are identified
on an additional sheet: ☒

Name of Depository: **American Type Culture Collection**
Address of Depository: **10801 University Boulevard**
Manassas, Virginia 20110-2209
United States of America

	Accession Number	Date of Deposit		Accession Number	Date of Deposit
1	203027	26-Jun-1998	2	209463	14-Nov-1997
3	203069	27-Jul-1998	4	209551	12-Dec-1997
5	203070	27-Jul-1998	6	209563	18-Dec-1997
7	203071	27-Jul-1998	8	209580	14-Jan-1998
9	203331	8-Oct-1998	10	209603	29-Jan-1998
11	203364	19-Oct-1998	12	209626	12-Feb-1998
13	203499	1-Dec-1998	14	209627	12-Feb-1998
15	203517	10-Dec-1998	16	209628	12-Feb-1998
17	203570	11-Jan-1999	18	209641	25-Feb-1998
19	203648	9-Feb-1999	20	209651	4-Mar-1998
21	209007	28-Apr-1997	22	209683	20-Mar-1998
23	209008	28-Apr-1997	24	209745	7-Apr-1998
25	209010	28-Apr-1997	26	209746	7-Apr-1998
27	209012	28-Apr-1997	28	209782	20-Apr-1998
29	209045	15-May-1997	30	209852	7-May-1998
31	209070	22-May-1997	32	209877	18-May-1998
33	209071	22-May-1997	34	209878	18-May-1998
35	209072	22-May-1997	36	209889	22-May-1998
37	209082	29-May-1997	38	209965	11-Jun-1998
39	209083	29-May-1997	40	97899	26-Feb-1997
41	209084	29-May-1997	42	97922	7-Mar-1997
43	209085	29-May-1997	44	97923	7-Mar-1997
45	209089	5-Jun-1997	46	97958	13-Mar-1997
47	209119	12-Jun-1997	48	97977	4-Apr-1997
49	209125	19-Jun-1997	50	PTA-1543	21-Mar-2000
51	209126	19-Jun-1997	52	PTA-1544	21-Mar-2000
53	209138	3-Jul-1997	54	PTA-163	1-Jun-1999
55	209139	3-Jul-1997	56	PTA-2069	9-Jun-2000
57	209145	17-Jul-1997	58	PTA-2075	9-Jun-2000
59	209195	1-Aug-1997	60	PTA-2076	9-Jun-2000
61	209215	21-Aug-1997	62	PTA-322	9-Jul-1999
63	209224	28-Aug-1997	64	PTA-622	2-Sep-1999

Applicant's File		International Application	
Reference Number:	PS906PCT	Number:	Unassigned

	Accession Number	Date of Deposit		Accession Number	Date of Deposit
65	209225	28-Aug-1997	66	PTA-623	2-Sep-1999
67	209236	4-Sep-1997	68	PTA-841	13-Oct-1999
69	209242	12-Sep-1997	70	PTA-842	13-Oct-1999
71	209243	12-Sep-1997	72	PTA-843	13-Oct-1999
73	209244	12-Sep-1997	74	PTA-845	13-Oct-1999
75	209277	18-Sep-1997	76	PTA-847	13-Oct-1999
77	209299	25-Sep-1997	78	PTA-848	13-Oct-1999
79	209300	25-Sep-1997	80	PTA-849	13-Oct-1999
81	209324	2-Oct-1997	82	PTA-855	18-Oct-1999
83	209346	9-Oct-1997	84	PTA-867	26-Oct-1999
85	209368	16-Oct-1997	86	PTA-868	26-Oct-1999
87	209407	23-Oct-1997	88	PTA-871	26-Oct-1999
89	209423	30-Oct-1997	90	PTA-885	28-Oct-1999

EUROPE

In respect of those designations in which a European Patent is sought a sample of the deposited microorganism will be made available until the publication of the mention of the grant of the European patent or until the date on which the application has been refused or withdrawn or is deemed to be withdrawn, only by the issue of such a sample to an expert nominated by the person requesting the sample (Rule 28(4) EPC).

CANADA

The applicant requests that, until either a Canadian patent has been issued on the basis of an application or the application has been refused, or is abandoned and no longer subject to reinstatement, or is withdrawn, the Commissioner of Patents only authorizes the furnishing of a sample of the deposited biological material referred to in the application to an independent expert nominated by the Commissioner, the applicant must, by a written statement, inform the International Bureau accordingly before completion of technical preparations for publication of the international application.

NORWAY

The applicant hereby requests that the application has been laid open to public inspection (by the Norwegian Patent Office), or has been finally decided upon by the Norwegian Patent Office without having been laid open inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Norwegian Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Norwegian Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on the list of recognized experts drawn up by the Norwegian Patent Office or any person approved by the applicant in the individual case.

AUSTRALIA

The applicant hereby gives notice that the furnishing of a sample of a microorganism shall only be effected prior to the grant of a patent, or prior to the lapsing, refusal or withdrawal of the application, to a person who is a skilled addressee without an interest in the invention (Regulation 3.25(3) of the Australian Patents Regulations).

FINLAND

The applicant hereby requests that, until the application has been laid open to public inspection (by the National Board of Patents and Regulations), or has been finally decided upon by the National Board of Patents and Registration without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art.

UNITED KINGDOM

The applicant hereby requests that the furnishing of a sample of a microorganism shall only be made available to an expert. The request to this effect must be filed by the applicant with the International Bureau before the completion of the technical preparations for the international publication of the application.

DENMARK

The applicant hereby requests that, until the application has been laid open to public inspection (by the Danish Patent Office), or has been finally decided upon by the Danish Patent office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the Danish Patent Office not later than at the time when the application is made available to the public under Sections 22 and 33(3) of the Danish Patents Act. If such a request has been filed by the applicant, any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Danish Patent Office or any person by the applicant in the individual case.

SWEDEN

The applicant hereby requests that, until the application has been laid open to public inspection (by the Swedish Patent Office), or has been finally decided upon by the Swedish Patent Office without having been laid open to public inspection, the furnishing of a sample shall only be effected to an expert in the art. The request to this effect shall be filed by the applicant with the International Bureau before the expiration of 16 months from the priority date (preferably on the Form PCT/RO/134 reproduced in annex Z of Volume I of the PCT Applicant's Guide). If such a request has been filed by the applicant any request made by a third party for the furnishing of a sample shall indicate the expert to be used. That expert may be any person entered on a list of recognized experts drawn up by the Swedish Patent Office or any person approved by a applicant in the individual case.

NETHERLANDS

The applicant hereby requests that until the date of a grant of a Netherlands patent or until the date on which the application is refused or withdrawn or lapsed, the microorganism shall be made available as provided in the 31F(1) of the Patent Rules only by the issue of a sample to an expert. The request to this effect must be furnished by the applicant with the Netherlands Industrial Property Office before the date on which the application is made available to the public under Section 22C or Section 25 of the Patents Act of the Kingdom of the Netherlands, whichever of the two dates occurs earlier.

What Is Claimed Is:

1. Use of a polypeptide for the preparation of a diagnostic or pharmaceutical composition for diagnosing or treating a gastrointestinal disorder, wherein said polypeptide comprises an amino acid sequence at least 95% identical to a sequence selected from the group consisting of:

(a) a full length polypeptide of SEQ ID NO:Y or a full length polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(b) a predicted secreted form of SEQ ID NO:Y or a secreted form of the polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(c) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(d) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A, wherein said fragment has biological activity;

(e) a polypeptide domain of SEQ ID NO:Y as referenced in Table 1B;

(f) a polypeptide domain of SEQ ID NO:Y as referenced in Table 2; and

(g) a predicted epitope of SEQ ID NO:Y as referenced in Table 1B.

2. Use of the polypeptide of claim 1, wherein said wherein said polypeptide comprises a heterologous amino acid sequence.

3. Use of a polypeptide for the preparation of a diagnostic or pharmaceutical composition for diagnosing or treating a gastrointestinal disorder, wherein said polypeptide comprises an amino acid sequence selected from the group consisting of:

(a) a full length polypeptide of SEQ ID NO:Y or a full length polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(b) a predicted secreted form of SEQ ID NO:Y or a secreted form of the polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(c) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(d) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A, wherein said fragment has biological activity;

(e) a polypeptide domain of SEQ ID NO:Y as referenced in Table 1B;

(f) a polypeptide domain of SEQ ID NO:Y as referenced in Table 2; and

(g) a predicted epitope of SEQ ID NO:Y as referenced in Table 1B.

4. Use of the polypeptide of claim 3, wherein said polypeptide comprises a heterologous amino acid sequence.

5. Use of an antibody or fragment thereof for the preparation of a diagnostic or pharmaceutical composition for diagnosing or treating a gastrointestinal disorder, wherein said antibody or fragment thereof binds a polypeptide comprising an amino acid sequence at least 95% identical to a sequence selected from the group consisting of:

(a) a full length polypeptide of SEQ ID NO:Y or a full length polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(b) a predicted secreted form of SEQ ID NO:Y or a secreted form of the polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(c) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(d) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A, wherein said fragment has biological activity;

(e) a polypeptide domain of SEQ ID NO:Y as referenced in Table 1B;

(f) a polypeptide domain of SEQ ID NO:Y as referenced in Table 2; and

(g) a predicted epitope of SEQ ID NO:Y as referenced in Table 1B.

6. Use of an antibody or fragment thereof for the preparation of a diagnostic or pharmaceutical composition for diagnosing or treating a gastrointestinal disorder, wherein said antibody or fragment thereof binds a polypeptide selected from the group consisting of:

(a) a full length polypeptide of SEQ ID NO:Y or a full length polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(b) a predicted secreted form of SEQ ID NO:Y or a secreted form of the polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(c) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(d) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A, wherein said fragment has biological activity;

(e) a polypeptide domain of SEQ ID NO:Y as referenced in Table 1B;

(f) a polypeptide domain of SEQ ID NO:Y as referenced in Table 2; and

(g) a predicted epitope of SEQ ID NO:Y as referenced in Table 1B.

7. Use of a nucleic acid molecule for the preparation of a diagnostic or pharmaceutical composition for diagnosing or treating a gastrointestinal disorder, wherein said nucleic acid molecule comprises a polynucleotide sequence at least 95% identical to a sequence selected from the group consisting of:

(a) a polynucleotide fragment of SEQ ID NO:X as referenced in Table 1A;

(b) a polynucleotide encoding a full length polypeptide of SEQ ID NO:Y or a full length polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(c) a polynucleotide encoding a predicted secreted form of SEQ ID NO:Y or a secreted form of the polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(d) a polynucleotide encoding a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(e) a polynucleotide encoding a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A, wherein said fragment has biological activity;

(f) a polynucleotide encoding a polypeptide domain of SEQ ID NO:Y as referenced in Table 1B;

(g) a polynucleotide encoding a polypeptide domain of SEQ ID NO:Y as referenced in Table 2; and

(h) a polynucleotide encoding a predicted epitope of SEQ ID NO:Y as referenced in Table 1B.

8. Use of the nucleic acid molecule of claim 7, wherein said nucleic acid molecule comprises a heterologous polynucleotide sequence.

9. Use of a nucleic acid molecule for the preparation of a diagnostic or pharmaceutical composition for diagnosing or treating a gastrointestinal disorder, wherein said nucleic acid molecule comprises a polynucleotide sequence selected from the group consisting of:

(a) a polynucleotide fragment of SEQ ID NO:X as referenced in Table 1A;

(b) a polynucleotide encoding a full length polypeptide of SEQ ID NO:Y or a full length polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(c) a polynucleotide encoding a predicted secreted form of SEQ ID NO:Y or a secreted form of the polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(d) a polynucleotide encoding a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(e) a polynucleotide encoding a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A, wherein said fragment has biological activity;

(f) a polynucleotide encoding a polypeptide domain of SEQ ID NO:Y as referenced in Table 1B;

(g) a polynucleotide encoding a polypeptide domain of SEQ ID NO:Y as referenced in Table 2; and

(h) a polynucleotide encoding a predicted epitope of SEQ ID NO:Y as referenced in Table 1B.

10. Use of the nucleic acid molecule of claim 9, wherein said nucleic acid molecule comprises a heterologous polynucleotide sequence.

11. Use of an agonist or antagonist for the preparation of a pharmaceutical composition for treating a gastrointestinal disorder, wherein said agonist or antagonist binds a polypeptide comprising an amino acid sequence at least 95% identical to a sequence selected from the group consisting of:

(a) a full length polypeptide of SEQ ID NO:Y or a full length polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(b) a predicted secreted form of SEQ ID NO:Y or a secreted form of the polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(c) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(d) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A, wherein said fragment has biological activity;

(e) a polypeptide domain of SEQ ID NO:Y as referenced in Table 1B;

(f) a polypeptide domain of SEQ ID NO:Y as referenced in Table 2; and

(g) a predicted epitope of SEQ ID NO:Y as referenced in Table 1B.

12. Use of an agonist or antagonist for the preparation of a pharmaceutical composition for treating a gastrointestinal disorder, wherein said agonist or antagonist binds a polypeptide selected from the group consisting of:

(a) a full length polypeptide of SEQ ID NO:Y or a full length polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(b) a predicted secreted form of SEQ ID NO:Y or a secreted form of the polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(c) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(d) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A, wherein said fragment has biological activity;

(e) a polypeptide domain of SEQ ID NO:Y as referenced in Table 1B;

(f) a polypeptide domain of SEQ ID NO:Y as referenced in Table 2; and

(g) a predicted epitope of SEQ ID NO:Y as referenced in Table 1B.

13. A polypeptide comprising an amino acid sequence at least 95% identical to a sequence selected from the group consisting of:

(a) a full length polypeptide of SEQ ID NO:Y or a full length polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(b) a predicted secreted form of SEQ ID NO:Y or a secreted form of the polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(c) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(d) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A, wherein said fragment has biological activity;

(e) a polypeptide domain of SEQ ID NO:Y as referenced in Table 1B;

(f) a polypeptide domain of SEQ ID NO:Y as referenced in Table 2; and

(g) a predicted epitope of SEQ ID NO:Y as referenced in Table 1B.

14. The polypeptide of claim 13, wherein said polypeptide comprises a heterologous amino acid sequence.

15. Use of the polypeptide of claim 13 for identifying a binding partner comprising:

(a) contacting the polypeptide of claim 13 with a binding partner; and

(b) determining whether the binding partner increases or decreases activity of the polypeptide.

16. A polypeptide comprising an amino acid sequence selected from the group consisting of:

(a) a full length polypeptide of SEQ ID NO:Y or a full length polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(b) a predicted secreted form of SEQ ID NO:Y or a secreted form of the polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(c) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(d) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A, wherein said fragment has biological activity;

(e) a polypeptide domain of SEQ ID NO:Y as referenced in Table 1B;

(f) a polypeptide domain of SEQ ID NO:Y as referenced in Table 2; and

(g) a predicted epitope of SEQ ID NO:Y as referenced in Table 1B.

17. The polypeptide of claim 16, wherein said polypeptide comprises a heterologous polypeptide sequence.

18. Use of the polypeptide of claim 16 for identifying a binding partner comprising:

(a) contacting the polypeptide of claim 16 with a binding partner; and

(b) determining whether the binding partner increases or decreases activity of the polypeptide.

19. An antibody or fragment thereof that binds a polypeptide comprising an amino acid sequence at least 95% identical to a sequence selected from the group consisting of:

(a) a full length polypeptide of SEQ ID NO:Y or a full length polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(b) a predicted secreted form of SEQ ID NO:Y or a secreted form of the polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(c) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(d) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A, wherein said fragment has biological activity;

(e) a polypeptide domain of SEQ ID NO:Y as referenced in Table 1B;

(f) a polypeptide domain of SEQ ID NO:Y as referenced in Table 2; and

(g) a predicted epitope of SEQ ID NO:Y as referenced in Table 1B.

20. An antibody or fragment thereof that binds a polypeptide selected from the group consisting of:

(a) a full length polypeptide of SEQ ID NO:Y or a full length polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(b) a predicted secreted form of SEQ ID NO:Y or a secreted form of the polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(c) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(d) a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A, wherein said fragment has biological activity;

(e) a polypeptide domain of SEQ ID NO:Y as referenced in Table 1B;

(f) a polypeptide domain of SEQ ID NO:Y as referenced in Table 2; and

(g) a predicted epitope of SEQ ID NO:Y as referenced in Table 1B.

21. A nucleic acid molecule comprising a polynucleotide sequence at least 95% identical to a sequence selected from the group consisting of:

(a) a polynucleotide fragment of SEQ ID NO:X as referenced in Table 1A;

(b) a polynucleotide encoding a full length polypeptide of SEQ ID NO:Y or a full length polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(c) a polynucleotide encoding a predicted secreted form of SEQ ID NO:Y or a secreted form of the polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(d) a polynucleotide encoding a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(e) a polynucleotide encoding a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A, wherein said fragment has biological activity;

(f) a polynucleotide encoding a polypeptide domain of SEQ ID NO:Y as referenced in Table 1B;

(g) a polynucleotide encoding a polypeptide domain of SEQ ID NO:Y as referenced in Table 2; and

(h) a polynucleotide encoding a predicted epitope of SEQ ID NO:Y as referenced in Table 1B.

22. The nucleic acid molecule of claim 21, wherein said nucleic acid molecule comprises a heterologous polynucleotide sequence.

23. A recombinant vector comprising the nucleic acid molecule of claim 21.

24. A recombinant vector comprising the nucleic acid molecule of claim 22.

25. A recombinant host cell comprising the recombinant vector of claim 23.

26. A recombinant host cell comprising the recombinant vector of claim 24.

27. A nucleic acid molecule comprising a polynucleotide sequence selected from the group consisting of:

(a) a polynucleotide fragment of SEQ ID NO:X as referenced in Table 1A;

(b) a polynucleotide encoding a full length polypeptide of SEQ ID NO:Y or a full length polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(c) a polynucleotide encoding a predicted secreted form of SEQ ID NO:Y or a secreted form of the polypeptide encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(d) a polynucleotide encoding a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A;

(e) a polynucleotide encoding a polypeptide fragment of SEQ ID NO:Y or a polypeptide fragment encoded by the cDNA Clone ID in ATCC Deposit No:Z corresponding to SEQ ID NO:Y as referenced in Table 1A, wherein said fragment has biological activity;

(f) a polynucleotide encoding a polypeptide domain of SEQ ID NO:Y as referenced in Table 1B;

(g) a polynucleotide encoding a polypeptide domain of SEQ ID NO:Y as referenced in Table 2; and

(h) a polynucleotide encoding a predicted epitope of SEQ ID NO:Y as referenced in Table 1B.

28. The nucleic acid molecule of claim 27, wherein said nucleic acid molecule comprises a heterologous polynucleotide sequence.

29. A recombinant vector comprising the nucleic acid molecule of claim 27.

30. A recombinant vector comprising the nucleic acid molecule of claim 28.

31. A recombinant host cell comprising the recombinant vector of claim 29.

32. A recombinant host cell comprising the recombinant vector of claim 30.

Sequence List

<110> Human Genome Sciences, Inc.

<120> Human Secreted Proteins

<130> PS906PCT

<150> US 60/331,287

<151> 2001-11-13

<150> US 60/306,171

<151> 2001-07-19

<150> US 60/277,340

<151> 2001-03-21

<160> 650

<170> PatentIn Ver. 2.0

<210> 1

<211> 733

<212> DNA

<213> Homo sapiens

<400> 1

```

gggatccgga gcccaaactct tctgacaaaa ctcacacatg cccaccgtgc ccagcacctg      60
aattcgaggg tgcaccgtca gtcttcctct tcccccaaa acccaaggac accctcatga      120
tctcccgac tcctgaggtc acatgcgtgg tgggtgacgt aagccacgaa gacctgagg      180
tcaagttcaa ctggtacgtg gacggcgtgg aggtgcataa tgccaagaca aagccgcggg      240
aggagcagta caacagcacg taccgtgtgg tcagcgtcct caccgtcctg caccaggact      300
ggctgaatgg caaggagtac aagtgcagg tctccaacaa agcctccca accccatcg      360
agaaaaccat ctccaaagcc aaagggcagc cccgagaacc acaggtgtac accctgccc      420
catcccggga tgagctgacc aagaaccagg tcagcctgac ctgcctgggc aaaggcttct      480
atccaagcga catcgccgtg gagtgggaga gcaatgggca gccggagaac aactacaaga      540
ccacgctcc cgtgctggac tccgacggct ccttcttct ctacagcaag ctaccgtgg      600
acaagagcag gtggcagcag gggaacgtct tctcatgtct cgtgatgcat gaggtctctg      660
acaaccacta cagcagaag agcctctccc tgtctccggg taaatgagtg cgacggccgc      720
gactctagag gat                                     733

```

<210> 2

<211> 5

<212> PRT

<213> Homo sapiens

<220>

<221> Site

<222> (3)

<223> Xaa equals any amino acid

<400> 2

Trp Ser Xaa Trp Ser

1

5

<210> 3

<211> 86

<212> DNA

<213> Artificial Sequence

<220>

<221> Primer_Bind

<223> Synthetic sequence with 4 tandem copies of the GAS binding site found in the IRF1 promoter (Rothman et al., Immunity 1:457-468 (1994)), 18 nucleotides complementary to the SV40 early promoter, and a Xho I restriction site.

<400> 3

gcgcctcgag atttccccga aatctagatt tccccgaaat gatttccccg aaatgatttc 60
cccgaatat ctgccatctc aattag 86

<210> 4

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<221> Primer_Bind

<223> Synthetic sequence complementary to the SV40 promoter; includes a Hind III restriction site.

<400> 4

gcggcaagct ttttgcaaag cctagggc 27

<210> 5

<211> 271

<212> DNA

<213> Artificial Sequence

<220>

<221> Protein_Bind

<223> Synthetic promoter for use in biological assays; includes GAS binding sites found in the IRF1 promoter (Rothman et al., Immunity 1:457-468 (1994)).

<400> 5

ctcgagattt ccccgaaatc tagatttccc cgaaatgatt tccccgaaat gatttccccg 60
aaatatctgc catctcaatt agtcagcaac catagtcccc cccctaactc cgcccatccc 120
gccctaact ccgcccagtt ccgcccattc tccgcccatt ggctgactaa ttttttttat 180
ttatgcagag gccgaggccg cctcggcctc tgagctattc cagaagtagt gaggaggctt 240
ttttggaggc ctaggctttt gcaaaaagct t 271

<210> 6

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<221> Primer_Bind

<223> Synthetic primer complementary to human genomic EGR-1 promoter sequence (Sakamoto et al., Oncogene 6:867-871 (1991)); includes a Xho I restriction site.

<400> 6

gcgctcgagg gatgacagcg atagaacccc gg 32

<210> 7

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<221> Primer_Bind
 <223> Synthetic primer complementary to human genomic EGR-1 promoter sequence (Sakamoto et al., Oncogene 6:867-871 (1991)); includes a Hind III restriction site.

<400> 7
 gcgaagcttc gcgactcccc ggatccgcct c 31

<210> 8
 <211> 12
 <212> DNA
 <213> Homo sapiens

<400> 8
 ggggactttc cc 12

<210> 9
 <211> 73
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> Primer_Bind
 <223> Synthetic primer with 4 tandem copies of the NF-KB binding site (GGGGACTTTCCC), 18 nucleotides complementary to the 5' end of the SV40 early promoter sequence, and a XhoI restriction site.

<400> 9
 gcggcctcga ggggactttc ccggggactt tccggggact ttccgggact ttccatcctg 60
 ccattctcaat tag 73

<210> 10
 <211> 256
 <212> DNA
 <213> Artificial Sequence

<220>
 <221> Protein_Bind
 <223> Synthetic promoter for use in biological assays; includes NF-KB binding sites.

<400> 10
 ctcgaggga ctttcccggt gactttccgt ggactttccg ggactttcca tctgccatct 60
 caattagtca gcaaccatag tcccgcccct aactccgccc atcccgcccc taactccgcc 120
 cagttccgcc cattctccgc cccatggctg actaatTTTT tttatttatg cagaggccga 180
 ggccgcctcg gcctctgagc tattccagaa gtatgagga ggcttttttg gaggcctagg 240
 cttttgcaaa aagctt 256

<210> 11
 <211> 2703
 <212> DNA
 <213> Homo sapiens

<400> 11
 ggcacgagat ttcctacagg tgaaacgcca tcattaggat tcaactgtaac gttagtgtca 60
 ttaaactcac tagcattttt attaatggcc gttatctaca ctaagctata ctgcaacttg 120
 gaaaaagagg acctctcaga aaactcacia tctagcatga ttaagcatgt cgcttggcta 180
 atcttcacca attgcatctt tttctgccct gtggcgTTTT tttcatttgc accattgatc 240
 actgcaatct ctatcagccc cgaaataatg aagtctgtta ctctgatatt ttttccattg 300
 cctgcttgcc tgaatccagt cctgtatgtt ttcttcaacc caaagttaa agaagactgg 360
 aagttactga agcgacgtgt taccaagaaa agtggatcag tttcagtttc catcagtagc 420

caaggtgggt	gtctggaaca	ggatttctac	tacgactgtg	gcatgtactc	acatttgcag	480
ggcaacctga	ctgttttgcga	ctgctgcgaa	tcgtttcttt	taacaaagcc	agtatcatgc	540
aaacacttga	taaaatcaca	cagctgtcct	gcattggcag	tggttcttg	ccaaagacct	600
gagggctact	ggtccgactg	tggcacacag	tcggcccact	ctgattatgc	agatgaagaa	660
gattcctttg	tctcagacag	ttctgaccag	gtgcaggcct	gtggacgagc	ctgcttctac	720
cagagtagag	gattcccttt	ggtgcgctat	gcttacaatc	taccaagagt	taaagactga	780
actactgtgt	gtgtaaccgt	ttccccgcgc	aaccaaatac	agtgtttata	gagtgaaccc	840
tattctcatc	tttcatctgg	gaagcacttc	tgtaatcact	gcctgggtgc	acttagaaga	900
aggagaggtg	gcagttttatt	tctcaaacca	gtcattttca	aagaacaggt	gcctaaatta	960
taaattgggtg	aaaaatgcaa	tgtccaagca	atgtatgata	tgtttgaaac	aaatatatga	1020
cttgaaaagg	atcttaggtg	tagtagagca	atataatgtt	agttttttct	gatccataag	1080
aagcaaat	atacctat	gtgtattaa	cacaagataa	agaacagctg	ttaatat	1140
ttaaaaatct	attttaaa	gtgattttct	ataactgaag	aaaatatctt	gctaatttta	1200
cctaattgtt	catcctta	ctcaggacaa	cttactgcag	ggccaaaaaa	gggactgtcc	1260
cagctagaac	tgtgagagta	tacataggca	ttactttatt	atgttttcac	ttgccatcct	1320
tgacataaga	gaactataaa	ttttgtttaa	gcaatttata	aatctaaaac	ctgaagatgt	1380
ttttaaaaca	atattaacag	ctgttaggtt	aaaaaaatag	ctggacattt	gttttcagtc	1440
attatacatt	gctttgggtc	aatcagta	tttttcttaa	gtgttttgta	attacactac	1500
tagaaaaaaa	gtaaaaggct	aattgctgtg	tgggtttagt	cgatttggct	aaactactaa	1560
ctaattgtggg	ggtttaatag	tatctgaggg	atgttggtgc	ttcatgta	gttctcatta	1620
atgaatactt	cctaataatc	ttggctctac	taatat	caatttgctg	ggatgtcacc	1680
tagcaatagc	ttggattata	tagaaaagta	actgtgtgca	atacttgc	ttaatttagac	1740
gaaacgggga	gtaattatga	cacgaagtac	ttatgtttat	ttcttagtga	gctggattat	1800
cttgaaacctg	tgctattaaa	tggaatttct	catacatctt	ccccatacta	ttttttataa	1860
aagagcctat	tcaatagctc	agagggtgaa	ctctgggttaa	acaagataat	atgttattaa	1920
taaaaataga	agaagaaaga	ataaagctta	gtcctgtgtc	tttaaaaatt	aaaaatttta	1980
cttgattccc	atctatgggc	tttagacctt	ttactgggtg	gagtcttaaa	gttataattg	2040
ttcaatatgt	tttttgaaca	gtgtgctaaa	tcaatagcaa	acccactgcc	atattagtta	2100
ttctgaatat	actaaaaaaa	tccagctaga	ttgcagttta	ataattaaac	tgtacatact	2160
gtgcatataa	tgaattttta	tcttatgtaa	attattttta	gaacacaagt	tgggaaatgt	2220
ggcttctgtt	catttcgttt	aattaaagct	acctcctaaa	ctatagtggc	tgccagtgc	2280
agactgttaa	attgtgggtt	atatactttt	tgcattgtaa	atagtctttg	ttgtacattg	2340
tcagtgtaat	aaaaacagaa	tctttgtata	tcaaaatcat	gtagtttgta	taaaatgtgg	2400
gaaggattta	tttacagtgt	gttgtaattt	tgtaaggcca	actattttaca	agtttttaaa	2460
attgctatca	tgtatat	cacatctgat	aaatat	tcataacttg	gtaagaaact	2520
cctaattaaa	aggttttttc	caaaatcag	gttattgaaa	atttttcatt	ttattcattt	2580
aaaaactaga	ataacagata	tataaaagt	ttaatctttg	tgctatatgg	tatgaaatac	2640
aatattgtac	tcagtgtttt	gaattattaa	agtttctaga	aagcaaaaaa	aaaaaaaaaa	2700
aaa						2703

<210> 12

<211> 760

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (13)..(13)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (300)..(300)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (425)..(425)

<223> n equals a,t,g, or c

<400> 12

cggacgcgtg	gngcggacgc	gtggggaaaa	aataacaaaa	caaaaaacaa	gaaaaaaaaa	60
acacaaaacc	ccgtaaaatc	acaaagaaaa	tccaacacca	aaggcgacga	agccggctgg	120
ccgtgggtggg	ggcagcgtag	gcgtasatcc	ctctcctctc	acttagcctg	ttgactcttg	180
ttattatcat	gatattcaca	aaacgccgca	tgtttaaaaa	gtcatagatg	tcattctctc	240
tctgccccca	gggaggaaaag	ccaccttctc	ttgccccttg	gcccctttgt	caggggccan	300
gggtctgccg	gggtgggggtg	ccaacaggcc	tggcccttct	ctcccctgca	tccagccatg	360
ggggcctctg	cgattgccgg	aaggttgcat	ggctgggtccc	agggccagca	caggcccagag	420
gccngctgc	ctggttttat	ttttatttaa	ctttattttc	tgttttatga	gtgtgtgtcc	480
gccccacccc	accccccttca	gtgttaagtg	gggagccctg	ggggagtctc	tcctgcctcc	540
cagcctctcc	caagacctcc	cccctcgcca	ccagccatcc	ctctggacca	ggcagagggc	600
ggaccgggtg	ggcagggggcc	tgagggtggc	tcggggccagc	ccaccagcca	atggaccctc	660
cctcaggccg	ccagtgtcgc	cctgcccctt	tttaaaacaa	aatgccctcg	tttgtaaacc	720
cttagacgct	tgagaataaa	ccccttcctt	ttcttccaaa			760

<210> 13

<211> 1445

<212> DNA

<213> Homo sapiens

<400> 13

ggcacgaggg	atttgaacaa	gatcattaga	attcaaaaaa	caccagaaat	gaaagatctt	60
tcctgaagct	gttttagaat	attcatgata	tacccttaac	tgttctagag	aacaaaatgc	120
gtctgtgctc	cttcacaaaa	gtccctatga	atttgtttct	caatgtgata	cttcttaagt	180
tctataactt	ttgtttttca	ttaatttttag	gaaaatcctg	ccttgcttcg	ttgggcctat	240
gcaagaacaa	taaatgtcta	tcctaatttc	agaccactc	ctaaaaactc	actcatggga	300
gctctgtgtg	gatttggggc	cctcatcttc	atttattata	ttatcaaaac	tgagagggta	360
agtattcaga	ccagatgttt	agtatttgag	tgatagggtc	actttctagg	gaccagctgc	420
agtccttctt	cttgaagatt	gccaccagtg	ccccctccac	cttggggctg	tcctctgcct	480
tccttctctc	tcttctttta	tctttattcc	tttccagcag	gagttaaaac	agaaagtttt	540
cagtcacctt	tgtctatttt	tgtagttcca	tttgtttttt	aaaaagatga	tgtttattgg	600
gttaagtatt	agcagaatac	ataaatcatt	tagtagtctt	cctgtttgcg	tgaattctat	660
ttatgttggt	cacattttgc	aaattaatgt	taaaacctat	taatactcta	cgggacagag	720
aagcacaagc	tgctgtgtgt	gggaatagct	gccgtcagca	gcctgggtat	atgattggag	780
agaaagtcaa	gctgatcttt	ggcaccaaac	cattccacat	ctggtactaa	accctgagct	840
gcagccccc	ggcttgtgtt	gccactggag	cccactcgct	tagctttgtc	tttaactggc	900
ccatctgcat	tcccattaga	gttcgtgtat	tttgattatc	tggtgaatga	tctacttaac	960
agaaaggtag	tccacatttt	cccagaaagt	gtttgcattt	tgctttcaat	atatggtttt	1020
atgggataat	atattttctaa	tgactaaaat	gtgagtaaga	tgtttttgaa	taggagcatt	1080
ttcttactgt	gtcttttagt	cctcggatta	ctgtttcttc	gcacactccc	tgggctttag	1140
acagtgggat	tgcaattagg	tttgagggtg	ttcattctgt	ttgtcagttg	tacgggtggg	1200
tgtgccaaaa	tgagtttttt	cttacccttt	ttattttatt	atttttatct	aatatagcca	1260
actggcagaa	tatatgtctt	ttaatgtact	ttttttctgt	ctttacagga	taggaaagaa	1320
aaacttatcc	aggaaggaaa	attggatcga	acatttcacc	tctcatatta	agtctggcaa	1380
tgatgactat	atgtattcct	gcctaaataa	atcatctatt	aatcattaaa	aaaaaaaaaa	1440
aaaaa						1445

<210> 14

<211> 1333

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (411)..(411)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1264)..(1264)

<223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (1319)..(1319)
 <223> n equals a,t,g, or c

<400> 14
 cctggaacac ttcaacaacc agtatccagc cgcagagggtg gtgaactttg gcacctgggt 60
 cctcttcagc ttcccatat cctcatcat gctggtggtc agctgggttct ggatgcactg 120
 gctgttcctg ggctgcaatt ttaaagagac ctgctctctg agcaagaaga agaagaccaa 180
 aagggaacag ttgtcagaga agagsmtcca agaagaatat gaaaaactgg gagacattag 240
 ctaccagaa atggtgactg gwtttttctt catcctgatg accgtactgt ggtttamccg 300
 ggagcctggc tttgtccctg gctgggattc tttctttgaa aagaaaggct accgtactga 360
 tgccacagtc tctgtcttcc ttggcttctc cctcttctc attccagcga nagaagccct 420
 gctttgggaa aaagaatgat ggagagaacc aggagcactc actkgggacc gagcccatca 480
 tcacgtggaa ggacttccag aagaccatgc cctgggagat tgtcattctg gttgggggag 540
 gctatgctct ggcttctggt agcaagagct ctggcctctc tacatggatt gggaaccaga 600
 tgttgtccct gagcagcctc ccaccgtggg ctgtcaccct gctggcatgc atcctcgtgt 660
 ccattgtcac tgagtttgtg agcaaccag caaccatcac catcttctc cccatcctgt 720
 gcagcctgtc tgaacgctg cacattaacc cctctacac cctgatccca gtcaccatgt 780
 gcatctcctt tgcagtgatg ctgctgtgg gcaatcccc taatgccatc gtcttcagct 840
 atgggactg ccagatcaaa gatatggtga aagctggcct gggagtcaac gttattggac 900
 tgggtgatagt aatgtggcc atcaacacct ggggagttag cctcttccac ctggacactt 960
 acccagcatg ggcgagggtc agcaacatca ctgatcaagc ctaacgcaa gtgtacaaac 1020
 tggccaacc acaggagctg ccagtatcca gcagtatctg gaccacaggc aaagaaaacc 1080
 actaggacca ccaggagcac acaacccag acccagccg gagggcatcc ctccaccaga 1140
 agattccgcc acctcaagt aactgcagga atcctccaac aaccacaaac acatgtctcg 1200
 ctgttagtgt cttcttctc cctcagcac cacagctcaa gaaaacctaa agtttcaata 1260
 caanccatag gctcacaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1320
 aaaaaaaaaa aaa 1333

<210> 15
 <211> 751
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (1)..(1)
 <223> n equals a,t,g, or c

<400> 15
 natcattttc tgtccctcc tatcttaggc tgaccgggtc cctgatgtgt tacctgcttc 60
 tgctactgat ccaaactgca gaacttctca ttcattccca aggcctccag gcagtatcca 120
 atggggaatc agctctaaaa ggaaccagac caacgttttc cagccccttc attctggtga 180
 ctgaggggag gaaagaatgg gagggggtat tcttgtctag tggatggaaa ggaaacacac 240
 tgtcaaatta ctatatctcc ttggttttct attacagtag aattctccag ccatattttt 300
 attgtctatg ggggaagtgt gagatggtga ccttgattag aagtgtctgg agggggataa 360
 atggagggga taagattcag ttggttttgg aaaatgttaa agtcttaaaa taatgcgtcc 420
 atctgaagaa ttttttctaa aaccagagtt tataaaaaata tcaactgatac agcctgcccc 480
 ctcatttccc tgccacagga gatgtcttgg actagagaca cttgtttaat aatagcttgt 540
 ctctgatatt ccagtagct tccctctgtg tgaggaaagg atagaaatgt tcaggacatc 600
 atcatacagg ctctcatct acaaagttcc agtagcagtg acgcctacac ggaagacttg 660
 gaactgcaaa caggctgggg tcacctcagt gacatctgac gctgtccaac cagaagttcg 720
 atttttgttc tgggggtgaa ggaggaaaca g 751

<210> 16
 <211> 2849
 <212> DNA
 <213> Homo sapiens

<220>

<221> misc_feature
 <222> (1)..(1)
 <223> n equals a,t,g, or c

<400> 16
 ngggctgcaa ggacctgagc tcagcttccg cccagccag ggaagcggca ggggaaagca 60
 ccggctccag gccagcgtgg gccgctctct cgctcgggtgc ccgccgccat gtgggcccgtc 120
 ctgaggttag ccctgcggcc gtgtgcccgc gcctctcccg ccgggcccgc gcctatcac 180
 ggggactcgg tggcctcgct gggcaccag ccggacttgg gctctgccct ctaccaggag 240
 aactacaagc agatgaaagc actagtaaat cagctccatg aacgagtgga gcatataaaa 300
 ctaggaggtg gtgagaaagc ccgagcactt cacatatcaa gaggaaaact attgcccaga 360
 gaaagaattg acaatctcat agaccaggg tctccatttc tgggaattatc ccagtttgca 420
 gggtaccagt tatatgacaa tgaggaggtg ccaggaggtg gcattattac aggcattgga 480
 agagtatcag gtagaatg catgattatt gccaatgatg ccaccgtcaa aggaggtgcc 540
 tactaccag tgactgtgaa aaaacaatta cgggcccaag aaattgccat gcaaacagc 600
 ctcccctgca tctacttagt tgattcggga ggagcatact tacctcgaca agcagatgtg 660
 tttccagatc gagaccactt tggccgtaca ttctataatc aggcaattat gtcttctaaa 720
 aatattgcac agatgcagc ggtcatgggc tctgcaccg caggaggagc ctatgtgcct 780
 gccatggctg atgaaacat cattgtacgc aagcagggtta ccattttctt ggcaggacc 840
 cccttggtta aagcggcaac tggggaagaa gtatctgctg aggatcttgg aggtgctgat 900
 cttcattgca gaaagtctgg agtaagtac cactgggctt tggatgatca tcatgccctt 960
 cacttaacta ggaaggttgt gaggaatcta aattatcaga agaaattgga tgtcaccatt 1020
 gaaccttctg aagagccttt atttctgtct gatgaattgt atggaatagt tgggtgtaac 1080
 cttaagagga gctttgatgt ccgagaggtc attgctagaa tcgtggatgg aagcagattc 1140
 actgagttca aagcctttta tggagacaca ttagtacag gatttgctcg aatatttggg 1200
 taccagtag gtatcgttgg aaacaacgga gttctctttt ctgaatctgc aaaaaaggt 1260
 actcactttg tccagttatg ctgccaaaga aatattcctc tgctgttctt tcaaacatt 1320
 actggattta tggttgtag agagtatgaa gctgaaggaa ttgccaaagg tggtgccaag 1380
 atggtggccg ctgtggcctg tgcccagtg cctaagataa ccctcatcat tgggggctcc 1440
 tatggagccg gaaactatgg gatgtgtggc agagcgtata gcccaagatt tctctacatt 1500
 tggccaaatg ctctgtatct agtgatggga ggagagcagg cagccaatgt gttggccag 1560
 ataacaagg accaaagagc ccgggaaggga aagcagttct ccagtgtga tgaagcggct 1620
 ttaaaagagc ccatcattaa gaagtttgaa gaggaaggaa acccttacta ttccagcgca 1680
 agggatggg atgatgggat cattgatcca gcagacacca gactggtctt gggctcagc 1740
 tttagtgcag ccctcaacgc accaatagag aagactgact tcggtatctt caggatgtaa 1800
 ctggaataaa ggatgttttc tgttggacat gtactgaaaa ttaacacatg tagtagcctt 1860
 aaaattttag acttctcgaa catgaggctg ttacagtaat ttttttaaca ctgtgcattg 1920
 tacttttcta ccttaaaaaa atcagtggag atatttattt aatgaacatc aattcctttt 1980
 aaattttctt agagaaattt ctctgtggct cagttttacc acccataaag cggagacagt 2040
 aatttatggt tatcctttct gaccacaaa gtatgaaaag ttctgtaatc tgtaaaactca 2100
 gttctgtaat ctgtattatt gagatgatta atataaagtt gtattttcac tgaaactgat 2160
 tgtcattgct gagttatgct atggtgatac ttacacggc gctataattt tatgacaagg 2220
 catctgttac ttcagctggc cataaagtgc cctcaacact gctgtgcaga ccatcaccac 2280
 cattcatctc cagaattggg actcagtacc aaactgcaaa ctatagcgat tcaacaaca 2340
 gtgctccca atttcaccac taccacgagc ccatgacatc tactatata catactgagt 2400
 ctgagaaagc gatgtaacca caatagacac aaaccagaca atacgaaaga ataaatacac 2460
 gactccaccg aagcaacaca acaccagaa gatcaacaa gactatgcgc caccacacca 2520
 cccaaacagc aggaacaaag agaacctaaag aaaaacacca caaacaagaa tctacacaac 2580
 aaacgcaaca tcaacaagat agccaaggat agactacaca aaaagccata gaggaacctc 2640
 ggactggtca ccaagagcag aacaaccgac aacacacaat acagtacaaa caagacaaac 2700
 gctggacaag cgagtataaa gatgaagaaa aaacgaagaa tcaacaacag gagaagtata 2760
 tgaaaacaac accaacgcaa gaacacaaca gtctgaacga cagagacaaa tactaaaacg 2820
 acaaacgtca gctactatta accgaaaaa 2849

<210> 17
 <211> 755
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature

<222> (1)..(1)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (733)..(734)
 <223> n equals a,t,g, or c

<400> 17
 nattttcccggt tcaagttatttc cgggtgacact atagaaggta cgcttgcagg taccgggtccg 60
 gaattcccggt gtcgacccac gcgtccgaac tcctgaaaca gtgaggacat ctcacagacc 120
 agacaggagc tggggctctg catctcacag cgggtgcctgt cagacaggaa gaagtcccg 180
 agaagtggcg tgtgggtcag ggcctgcacg atgcagttca tgaagcatgt gttcccaagg 240
 ttgatcagcc cagcgagacc tatgggtgcag ttcgagggtga tctttctcct tttcgggttg 300
 tgcttcagca gttcaagctc ccgtttgggtt ggttcccaag ttgaaaactt ctctccaacg 360
 ccttgcatctt tccaagcttt tcgctgctcc tccttggcga ttatttccat gtctttgtca 420
 tagatgtagt cctggcacag aaaacagtag atgcctccgt acatcagatc aatggccagg 480
 ttgtgcccgt tcgccttcgc atgctcgtga atatgcttct ttgtgaaaca gccgaagaag 540
 acacagtaga ggcaggaatg cagcctgttg aggtggacgc cacagacatg gcagatacag 600
 gacttggcct tgcgcttgcg ggcctcagcc gtgcccgtcc acacgaagca ctggtagatg 660
 gcccgagggt tcgtcttcca gttgtccacc ttgaagctgc ccagggtgcga gcagcccggc 720
 ggcgctaccg ccnntcggc gtccatggcc tcgcc 755

<210> 18
 <211> 4129
 <212> DNA
 <213> Homo sapiens

<400> 18
 ccacgcgtcc gctttttctc aggatgaata ttttctggc cgactcattg atccttggta 60
 caaataaact tctggaagac ccagagagag gaaaacacag gagaattga gcgatgtacg 120
 tacatcaaat accactactc ctcagcaacc atccccagga acctcacttt caatatcacg 180
 aagaccatcc gtcaggatga gtggcatgcc ctacacctgc gcagaatgac ggctggcttc 240
 atgggcatgg cgggtggccat catcctcttt ggctggatca tcggcgtgct gggctgctgc 300
 tgggaccgag gccttatgca gtacgtggca ggctgctctt cctcatggga gggaaaacag 360
 tgggaattaaa gagtgtctgc cccagcccgg cagggtgaag taggatgggg aaaacgttct 420
 caccagaccc tgggacttct atgctgcagc atcgtgacct gagggggtga tgcagttgcc 480
 acagctcttt gaggcaaagg ccccgatgct ctgtggacag cctcaggctt gggatggatt 540
 tggcagttag gaacttattg taacagaaga aagtcattca agatgcctga ggaaagaaac 600
 cttcaattga ccagccggc tggaaaatgt ggccaagaaa accgcagaga ccaatgttcg 660
 gaggagaaaa ccagaaaagag gggcctgctt gggccctttg atcctttatg gccgattccg 720
 tggacattgc tgctctcac gccggcagcc tctcttgagt acctcaattg cagtctccag 780
 accctcacc cgcaggcatt cctgggtcgg tgtcccagtc ggtcacagtc atggatcctc 840
 tgcagagcag tagaaagtcg ggaggggccc gtgccatgg tcaggaaagg agcggcagga 900
 ggaaagagga gcatgagaac tcagaagaaa ttgtacctac tcagatgtgg agtgaggata 960
 gacgttccca gattcaaagg catcatgaag tgtcatgaca agatagaaaa gactttgggc 1020
 tggccaagaa ggaactggat aaaattatga gtgaggtaca gcagggtggga acagtgtcac 1080
 tgaaccctat caacagcaga gcatgagaac gtgaattcct gctgctgggg aggcaatgaa 1140
 atgatattgg ccttcagatg tctatgaatc ctgaccacc gtgggtgccca gttttcaaga 1200
 gggcttccca tcaaatattg tgcgcaaagg atggatggat gaaaggaaga gtgagccaat 1260
 aaacgagggga acgcccgggaa aggcagcctc aagccgttg gcccctggc cccaccgctc 1320
 cctgagcatc gagccggttc ccgccccggc ccgaactggc ccgcccgcgc tcgcagcccc 1380
 gcgcccgaac ccgagggcgg cggcagcgg tcttgaacg agccggggaa tctggaggga 1440
 gcacacagga aaggcagagc cgcgagctgg accagccgtg caaatctcta gaagatgacg 1500
 gtgttcttta aaacgcttcg aaatcactgg aagaaaacta cagctgggct ctgcctgctg 1560
 acctggggag gccattggct ctatggaaaa cactgtgata acctcctaag gagagcagcc 1620
 tgtcaagaag ctcagggtgt tggcaatcaa ctcattcctc ccaatgcaca agtgaagaag 1680
 gccactgttt tctcaatcct gcagcttgca aaggaaaagc caggactcta tttgaaaaaa 1740
 atgctgcccg attttacatt tatctggcat ggaatgtgact attgtaagac agattatgag 1800
 ggacaagcca agaaactcct ggaactgatg gaaaacacgg atgtgatcat tgttcagga 1860
 ggagatggga cactgcagga ggtgtgtact ggtgttcttc gacgaacaga tgaggctacc 1920

```

ttcagtaaga ttccattgg atttatccca ctgggagaga ccagtagttt gagtcatacc 1980
ctctttgccg aaagtggaaa caaagtccaa catattactg atgccacact tgccattgtg 2040
aaaggagaga cagttccact tgatgtcttg cagatcaagg gtgaaaagga acagcctgtg 2100
tttgcaatga ccggccttcg atggggatct ttcagagatg ctggcgctcaa agttagcaag 2160
tactgggtatc ttgggcctct aaaaatcaaa gcagcccact ttttcagcac tcttaaggag 2220
tgccctcaga ctcatcaagc ctctatctca tacacgggac ctacagagag acctcccaat 2280
gaaccagagg agaccctgt acaaaggcct tctttgtaca ggagaatatt acgaaggctt 2340
gcgtcctact gggcacaacc acaggatgcc ctttcccaag aggtgagccc ggagggtctgg 2400
aaagatgtgc agctgtccac cattgaactg tccatcacia cacggaataa tcagcttgac 2460
ccgacaagca aagaagattt tctgaatatc tgcatgaaac ctgacaccat .cagcaaagga 2520
gactttataa ctataggaag tcgaaagggtg agaaacccca agctgcacgt ggaggggacg 2580
gagtgtctcc aagccagcca gtgcactttg cttatcccgg agggagcagg gggctctttt 2640
agcatgaca gtgaggagta tgaagcgatg cctgtggagg tgaaactgct cccagggaag 2700
ctgcagttct tctgtgatcc taggaagaga gaacagatgc tcacaagccc caccagtg 2760
gcagcagaag acaagcactc tgagaccaca ctttaggcca ccggtgggac caaaagggaa 2820
caggtgcctc agccatccca acagtgtcgt cagagggtcc ccagggcatt ttcattggca 2880
gtaccctctc gcccccactc cagcagtgct tcccaaagtg tgctctgtca cctgctttgc 2940
aatcggtctc cattagcgca tgttttattt tgggtgtgacg gttggccctc ctaaacacgg 3000
actttctcca ggctggttca agacggaaaa ggactttctt ctgttttctt ccaaagtga 3060
accacagtgg agagcccacg gtgggcttag cctgcctagg cccttcatt tctcttctt 3120
gaccgtgcta ggaattccag gaaagtgcac tcctgccctg gtgacctttt cctatgtcta 3180
ggctcctcca caggtgtctc tattttgtga gctccggctc ctgttttagct tttatttcag 3240
ttctaacctc agtccagaaa catatgtgag gttgtttccc tcttcagcca cggctacaat 3300
accggaatat gctagttttt atttattttt ttaagtagtg ctctcctaat ggtttgcatg 3360
agagccacct ggggtacatg ttgaaaactt atttggggtc taccctaac ctaataaccc 3420
aaatttgggg atggggccca ggaatatgca tttttaaaaa gtcactctgcc cttcccaggt 3480
gattctgtaa gttgtccctc aactgtactt ggagaaatcg tgttttaaa cagtagtcca 3540
caaagtattc tgctcatgtg ccccaaaaag tattttgaaa aatcatgtat accctcacc 3600
atctaagttg atatctaaaa ttttatctaa gttggtatct aaaatttttc atgggaagtt 3660
aaatagttga caaagtatgt atttgctggt gtcgtgtaaa tattggtatt ttaaaataaa 3720
aactgttaca tcactatttt aaacatatcc agtacaattt aaatatcaca acaatttgac 3780
acccttcatt catttataaa aataaatgag ctagtctttt agtagttaaa catttcaaat 3840
tggtttttct ccttctgtat ttccatacca cttttcagcc aagaatccta tcataatgta 3900
atctattatg cccgacatct ttttaataaa ttcaccccat tacttcttgt caacaaaaaa 3960
tataaatgga aatttttttt ttagctcttg ctttaagtgt ttgtttgtta tctcagtcca 4020
gaaccaatat tatcgttaatt aattattggt atataatgaa aacggtatta attcttggat 4080
gattaaaagt ttttttatta gaatgttaaa aaaaaaaaaa aaaaaaaaaa 4129

```

<210> 19

<211> 1674

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1649)..(1649)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1663)..(1663)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1665)..(1665)

<223> n equals a,t,g, or c

<400> 19

```

caagttggta cgcctgcagg taccgggtccg gaattcccg gtcgaccac gcgtccggtc 60
gaagataggt tcgagacggg ggatgttgca gctgatcatg cagttgggtt cggtgctgct 120

```

cacacgctgc	cccttttggg	gctgcttcag	ccagctcatg	ctgtacgctg	agagggctga	180
ggcacgccgg	aagcccgaca	tcccagtgcc	ttacctgtat	ttcgacatgg	gggcagccgt	240
gctgtgcgct	agtttcatgt	ccttttggcgt	gaagcggcgc	tggttcgcgc	tggggggccgc	300
actccaattg	gccattagca	cctacgccgc	ctacatcggg	ggctacgtcc	actacgggga	360
ctggctgaag	gtccgtatgt	actcgcgcac	agttgccatc	atcggcggct	ttcttgtgtt	420
ggccagcgg	gctggggagc	tgtaccgccg	gaaacctcgc	agccgctccc	tgcagtccac	480
cggccaggtg	ttcctgggta	tctacctcat	ctgtgtggcc	tactcactgc	agcacagcaa	540
ggaggaccgg	ctggcgtatc	tgaaccatct	cccaggagg	gagctgatga	tccagctggt	600
cttcgtgctg	tatggcatcc	tggccctggc	ctttctgtca	ggctactacg	tgacctcgc	660
tgcccagatc	ctggctgtac	tgtgtccccc	tgtcatgctg	ctcattgatg	gcaatgttgc	720
ttactggcac	aacacgcggc	gtgttgagtt	ctggaaccag	atgaagctcc	ttggagagag	780
tgtgggcgtg	ctcggaactg	ctgtcatcct	ggccactgat	ggctgagttt	tatggcaaga	840
ggctgagatg	ggcaccaggga	gccactgagg	gtcacccctgc	cttcctcctt	gctggcccag	900
ctgctgttta	tttatgcttt	ttggtctgtt	tgtttgatct	tttgcttttt	taaaattgtt	960
ttttgcagtt	aagaggcagc	tcatttgtcc	aaatttctgg	gctcagcgt	tgggagggca	1020
ggagccctgg	cactaatgct	gtacaggttt	ttttcctgtt	aggagagctg	aggccagctg	1080
cccactgagt	ctcctgtccc	tgagaaggga	gtatggcagg	gctgggatgc	ggctactgag	1140
agtgggagag	tgggagacag	aggaaggaag	atggagattg	gaagtgagca	aatgtgaaaa	1200
attcctcttt	gaacctggca	gatgcagcta	tgctgtttgg	agactgtgag	agactgtgag	1260
agggagtgtg	tgtgttgaca	catgtggatc	agggccaggga	agggcacagg	ggctgagcac	1320
tacagaagtc	acatgggttc	tcagggtatg	ccaggggcag	aaacagtacc	ggctctctgt	1380
cactcacctt	gagagtagag	cagaccctgt	tctgctctgg	gctgtgaagg	ggtggagcag	1440
gcagtggcca	gctttgccct	tctgtctgtc	tctgtttcta	gctccatggt	tggcctggtg	1500
ggggtggagt	tccttcccaa	acaccagacc	acacagtcct	ccaaaaataa	acattttata	1560
tagamaaaaa	aaaaaaaaaa	aagggcggcc	gctctagagg	atccctcgag	gggccaagc	1620
ttacgcgtgc	atgcgacgtc	atagctctnt	ccctatagaa	gtngnaaagg	gttc	1674

<210> 20

<211> 2005

<212> DNA

<213> Homo sapiens

<400> 20

ggttgctggc	ccagggtgagc	gggcgcgctg	gtccagggtga	gcggggcgcgt	ccccgcgacg	60
gcgctgcctg	cccgaggcgg	ttcacgtaaa	gacagcgaga	tcctgagggc	cagccgggaa	120
ggaggcggtg	atatggagct	ggctgctgcc	aagtccgggg	cccgcgccgc	tgccatagcgc	180
gtcctgggga	ctctgtgggg	acgcgccccg	cgccgcggct	cggggaccgc	tagagcccgg	240
cgctgcgcgc	atggccctgc	tctcgcgcc	cgcgctcacc	ctcctgtctc	tcctcatggc	300
cgtctgtgtc	aggtgccagg	agcaggccca	gaccaccgac	tggagagcca	ccctgaagac	360
catccggaac	ggcgttcata	agatagacac	gtacctgaac	gccgccttgg	acctcctggg	420
aggcgaggac	ggtctctgcc	agtataaatg	cagtgcaggga	tctaagcctt	tcccacgtta	480
tggttataaa	ccctccccac	cgaatggatg	tggctctcca	ctgtttggtg	ktcatcttaa	540
cattggtatc	ccttccctga	caaagtgttg	caaccaacac	gacagggtgt	atgaracctg	600
tggcaaaagc	agaatgact	gtgatgaaga	attccagtat	tgcctctcca	agatctgccg	660
agatgtacag	aaaacactag	gactaactca	gcatgttcag	gcatgtgaaa	caacagtgga	720
gctcttgttt	gacagtgtta	tacatttagg	ttgtaaacca	tatctggaca	gccaacgagc	780
cgcattgcagg	tgtcattatg	aagaaaaaac	tgatctttta	aggagatgcc	gacagctagt	840
gacagatgaa	gatggaagaa	cataaccttt	gacaaataac	taatgttttt	acaacataaa	900
actgtcttat	ttttgtgaaa	ggattatttt	gagaccttaa	aataatttat	atcttgatgt	960
taaaacctca	aagcaaaaaa	agtggaggag	atagtgaggg	gagggcacgc	ttgtcttctc	1020
aggtatcttc	cccagcattg	ctcccttact	tagtatgccca	aatgtcttga	ccaatatcaa	1080
aaacaagtgc	ttgttttagc	gagaattttg	aaaagaggaa	tatataactc	aattttcaca	1140
accacattta	ccaaaaaaag	agatcaaaata	taaaattcat	cataatgtct	gttcaacatt	1200
atcttatattg	gaaaaatggg	aaattatcac	ttacaagtat	ttgtttacta	tgaaatttta	1260
aatacacatt	tatgcctaga	aggaaacggac	tttttttttc	tatttttaatt	acacataata	1320
tgtaattaaa	gtmcaacata	atatgttggt	tctctgtagc	ccgttgagca	tatgagtaag	1380
tcacatttct	attaggacta	cttmcaagga	caagggttcc	atttttccag	ttgtaaaaatt	1440
ggaaccatca	gctgataacc	tcgtagggag	caacccagg	atagctaagt	gttatgtaat	1500
atgcctagaa	ggtgatgtga	atgcgattca	gaagcatagc	cactcccatt	ttatgagcta	1560
ctcacatgac	aaatgtcatc	ttttgctata	acctttgccca	agtttagagaa	aagatggatt	1620
taatgagata	aatgaaaaga	tatttamcct	aatatatcaa	ggcactattt	gctgttatgc	1680

tttgttattt	atttcccagc	acttgttcct	tattgtagat	tttttaaaga	ctgtaacctt	1740
ttactaactg	tgggtcttact	aaaatttgtg	cttgatactg	cttttcaaaa	agcctttaat	1800
tagagccaaa	aggatggaaa	aggcaagata	taaatgcctt	ttatagatct	cttatttaca	1860
ttgaaaatta	ttaccatatg	tttagagcaa	atccaagaaa	acttcaacag	cttctgaaga	1920
tgtctatgaa	tgttgaaaac	ttttcaatst	cttggratgc	tcakttaatt	cgagaccgg	1980
cttaacggat	taaacgcccc	cccc				2005

<210> 21

<211> 812

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (17)..(17)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (108)..(108)

<223> n equals a,t,g, or c

<400> 21

gaccattttt	agccaanctt	ggaattaacc	ctcacttaag	ggaacaaaag	ctggagcttc	60
caccgcgttg	gcggccgctc	tagaactagt	ggatcccccg	ggctgcanga	attcggccac	120
gagaggactt	ccccacctca	tgcagctatt	tgggcccgtg	cgtctgaaat	ttattatttc	180
agagtcaccc	ctttratgac	cttggcagtg	ractgcagtc	atctgtttag	gcctttccat	240
ggcccacgtc	aatgccgtta	tttctgtttg	ttgcacattt	gatttccttg	ttgttggcat	300
ttagaaggcc	ccttgccttc	cagatcacac	cacgggcatg	gaccacagag	attgcatctt	360
gtgagtctgt	agaaatgggtc	aaggccttgt	cctctcttag	gtccagagct	caggtgaatg	420
cagattttcc	cgcccatctg	tgtgaagtc	cctgtgggga	ggctcctggc	tggtttcctg	480
taggtagaca	gctacacgtc	ctgcccttca	ttggcttctt	ttcatgaagc	tcctgccatc	540
tacaaaaacat	gtctcccttc	ttgaatcaca	tctctgttat	tgaagctctg	gaagtcaacc	600
gggcgtgggtg	gctatgccta	taatcccagc	attttgggat	gccggggcgg	gtggatcacc	660
tgaggtcagg	agttcgggac	cagcctggcc	aacatggcga	aaccccgctc	ctaatacaag	720
tgcaaaaatt	ggccaggcgt	ggtgggtcact	gtgctccagc	ctgggtgaca	gagcgagctc	780
cgtctcaaaa	aaaaaaaaaa	aaaaaactcg	ag			812

<210> 22

<211> 910

<212> DNA

<213> Homo sapiens

<400> 22

ggcagagctg	gccttcgact	cgctatgtcc	actaacaata	tgtcggaccc	acggaggccg	60
aacaaagtgc	tgaggtgagg	accccagcgt	cgtgggcacg	ggttcggggt	gtgggtgtgg	120
atcggggccc	tgggaagcgc	ctgtctatcc	cgggggcagg	acctgagcgc	ccctgaccct	180
cgagcctgtc	gcaggtacaa	gccccgcgcg	agcgaatgta	acccggcctt	ggacgaccgc	240
acgccggact	acatgaacct	gctgggcatg	atcttcagca	tgtgcggcct	catgcttaag	300
ctgaagtggg	gtgcttgggt	cgctgtctac	tgtccttcca	tcagctttgc	caactctcgg	360
agctcggagg	acacgaagca	aatgatgagt	agcttcatgt	gagacttgcc	ctacagaaca	420
agtgaactct	gagtaagggg	tggggggacc	ccagcctggc	catcctagac	tgacacctct	480
ctcctgtctt	catgtctgcc	atctctgcgc	tgggtgatgtc	ctatctgcag	aatcctcagc	540
ccatgacgcc	cccatggtga	taccagccta	gaagggtcac	attttggacc	ctgtctatcc	600
actaggcctg	ggctttggct	gctaaacctg	ctgccttcag	ctgccatcct	ggacttccct	660
gaatgaggcc	gtctcgggtg	ccccagctgg	atagagggaa	cctggccctt	tcctagggaa	720
caccctaggc	ttaccctctc	tgcctccctt	cccctgcctg	ctgctggggg	agatgtgtgc	780
catgtttcta	gggggtattca	tttgtttctt	cgttgaaacc	tgttgtaatt	aaagtttttc	840
actctgaaaa	aaaaaaaaaa	aaaaaaaaac	tygrgggggg	gcccggaacc	caattcscgg	900
gatagtgagt						910

<210> 23
 <211> 821
 <212> DNA
 <213> Homo sapiens

<400> 23
 gttttgagtg tgtgaattac atatatgaac atctgaraaa atcctataag cagtttaatc 60
 aactgttcca ctccactcca agtgagtcca taggcagaat tgagttatgg ggagagcggc 120
 ctagtataaa ttggtttgcg taatacaaaag ttctactggg tagtgatgtt gtagaagttc 180
 atatagaatc agctgagctt tcagaaatgg tgaaaggggt gtaatagtca taacttagat 240
 tgtaattttt ttcccatagg cttttaaaaa atattcatga gggtcttttt ttatttcaat 300
 agtttttggg gaacaggtgg tttttgggta catgataagt tcttcagtgg tgatttctga 360
 gattttgggtg cacctgtcat gtgagcagta tgaactctac tttatgtgta gtcttatccc 420
 tcatgtgtat gaactccacc ttatgtgtag tcttatccct caccactccc tgcccttccc 480
 cacaagtccc caaagtccat tatatgatct ttatgccttt acatcttcac agtttagctc 540
 tcacacaact tattataatt tataagtaag ccagcattgg atatagttgt attccattat 600
 taatttaaga aaccttatgc aagtaattat tagtcatcat cccaaaaaaa agggagaaca 660
 gggttagatt cagaatactt tgataagagc taaatactat catgagtgcg gtcagctctgt 720
 agtaactttc cattgggtatt ctatgtcttt taggcttaca gatacttttt acactcttac 780
 aaaatgtgca caagaagaag ctgcagctca gagctcgtgc c 821

<210> 24
 <211> 981
 <212> DNA
 <213> Homo sapiens

<400> 24
 acggaagcgc agagcacgga ccccgcccc tcgcggcccc gctcgtgacg tcgcgggggg 60
 cgccggcctc cgcccgcccc cgaggcaggg ctctccccgg aggtccagcc ccctctgctc 120
 cccatgggca actgccaggc agggcacaac ctgcacctgt gtctggccca ccaccacct 180
 ctggctctgt ccactttgat cctgctgctc ctggcctct ctggcctggg ccttggcagc 240
 ttctctctca cccacaggac tggcctgccc agccctgaca tccccagga ctgggtctct 300
 tttttgagat cttttggcca gctgaccctg tgtcccagga atgggacagt cacagggaag 360
 tggcgaggggt ctacgctcgt gggcttgcgt accaccttga acttcggaga cggtcagac 420
 aggaacaaga cccggacatt ccaggccaca gtccctggga gtccagatggg attgaaagga 480
 tcttctgcag gacaactggg ccttatcaca gccagggtga ccacagaaag gactgcagga 540
 acctgectat attttagtgc tgttccagga atcctaccct ccagccagcc acccatatcc 600
 tgctcagagg agggggctgg aaatgccacc ctgagcccta gaatgggtga ggaatgtgtt 660
 agtgtctgga gccatgaagg ccttgtgctg accaagctgc tcacctcggg ggagctggct 720
 ctgtgtggct ccaggctgct ggtcttgggc tcttctctgc ttctcttctg tggccttctc 780
 tgctgtgtca ctgctatgtg cttccaccgg cgccgggagt cccactgggc tagaaccgg 840
 ctctgagggc actggcctag ttcccgactt gttctcagg tgtgaatcaa cttcttgggc 900
 cttggctctg agttgaaaaa ggttttagaa aaagtgaaga gctggaatgt gggggaaaat 960
 aaaaagcttt ttgcccata a 981

<210> 25
 <211> 1038
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (2)..(2)
 <223> n equals a,t,g, or c

<400> 25
 gnaattcggc acgagttaat gtataaaata tttctataat gaattttaat gggaattaga 60
 gcatcataga aaaaatgctc ttactgttga aaacattatt tggtacattt tggtaacta 120
 atctttcaat aacttttagt aactataatg ttaagttgta ccagtggcag tcttatatag 180
 taaatggcag ctgacagcat gaaaataaca tatctaata tttgtgacta tcttattagg 240
 aaaatcagag aatttcaaaa ccttgttagt ttttagggta tagtcacatt ttataaatgt 300

gcggtatatt	tatacatgat	ttgacgtttg	tgwaaatatt	ttccctggac	ttttatttta	360
gatgagatct	acagtgtagg	caaacttata	taatctgtca	actccattag	tgtcatagtc	420
agactcatcc	ccatgctaaa	attatagttg	tkaaaatagc	cttttgtaaa	tagttgtgtt	480
aggtcattat	caccaagtct	tcaaggkatt	acattataaa	aaccttggtt	tttattcttg	540
tgaatamccg	ttttttccat	gcaaagttaa	aattcttcag	cctttaattt	ttttattaat	600
atataaggat	gtgatgagta	tgactacaaa	acaggaaaaa	ataaacagat	ttcgtttgtg	660
gcttttgcta	aattgttacc	tgacaaaatc	ttagccagtt	cttcattttc	gttttgagat	720
gaagatactt	agtttttagtc	caggggctgg	gcgcgatagc	tgatgcctgt	gggtccagtg	780
ctttgcgggg	ccgaggcagg	tggtatcact	aagggtcagga	gtttgagacc	agcctgcccc	840
acatggtgaa	acgttgtctc	tactaaaaat	acaaaaatta	gacaggcgtg	gtggcacaca	900
tctgtaattc	cagctactca	ggaggctaac	acaggaaaat	tccttgaacc	tgggaggcag	960
aggttgcagt	gagccattgc	actccagcct	gggcaacaca	gtgagactct	tgtctcaaaa	1020
aaaaaaaaaa	aaactcga					1038

<210> 26

<211> 843

<212> DNA

<213> Homo sapiens

<400> 26

ggcagctgtc	caccgatccc	ggccaccgcc	cccgccacc	cccacccgc	gagcccatgg	60
aggctccggg	accccgcgcc	ttgaggactg	cgctctgtgg	cggtctgtgc	tgctcctcc	120
tatgtgcccc	gctggctgtg	gctggtaaag	gagctcgagg	ctttgggagg	ggagccctga	180
tccgcctgaa	tatctggccg	gcggtccaag	gggcctgcaa	acagctggag	gtctgtgagc	240
actgcgtgga	gggagacaga	gcgcgcaatc	tctccagctg	catgtgggag	cagtgcgggc	300
cagaggagcc	aggacactgt	gtggcccaat	ctgagggtgt	caaggaaggt	tgctccatct	360
acaaccgctc	agaggcatgt	ccagctgctc	accaccacc	cacctatgaa	ccgaagacag	420
tcacaacagg	gagcccccca	gtccctgagg	cccacagccc	tggttttgac	ggggccagct	480
ttatcgaggg	tgctgtgctg	gtgttgagcc	tacaggcggt	ggctttcttt	gtgctgact	540
tcctcaaggc	caaggacagc	acctaccaga	cgctaactct	acccctttgg	gcctggactc	600
catctgagg	ggaaaaggag	atgcagaggg	tggcctctgg	gcacccttgt	gggtaagcgg	660
ggggcggggg	cgggaaaaac	tctggccgcc	agttttttgg	tcctgcgggc	accaagcagg	720
ccaagtgttt	aatgcctgac	atctcctcct	gtcctggggc	tggaaacctg	agctgagaaa	780
atccctcaac	cacctcgtct	cctccatcgc	cctgtctggg	ccccccagcc	tgacagtggg	840
ttg						843

<210> 27

<211> 601

<212> DNA

<213> Homo sapiens

<400> 27

gctgccagga	attccggcac	ggggaacagt	gtaatatgta	agcaaagtct	gtataacaac	60
cacctggaag	cccctcatgt	atctcttttt	gaaaacactc	ctctctttct	ccactctaata	120
gatgaccacc	gccttgctct	ttatggtaat	cactgttctt	tgggttttat	tactgcattt	180
attggctaata	atatgcatcc	ctagaaaatg	tagttttggc	tgcttttata	taaatggaat	240
attactgcat	gcagctcttt	gatttgtgat	tgttttgctc	taaggcttgt	aagggtcatc	300
catgttttgc	atatagtttg	tttattgtca	ttgccataga	gtaaatcatt	gtatgaatat	360
actgcagttt	atttactgtt	gacatatgtt	tcagttgttt	ttactacta	ggaaatgcta	420
ctctgtacat	tcttgtatat	gtaccttggt	gcacatatgt	atgtttttct	agagtatata	480
cagtggcatg	ggattgctga	attaaaagg	ttgtatatct	tatactagaa	gataataaaa	540
acttttcctg	atggattctg	ccaattcaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaactcg	600
a						601

<210> 28

<211> 1276

<212> DNA

<213> Homo sapiens

<400> 28

gtgagtgtgt	ggcactgggtg	gcctggagcc	aaatttagct	tgggtgagag	ttgacaatgg	60
------------	-------------	------------	------------	------------	------------	----

tagttttcct	tcctcaagcc	cctctgtgcc	cctagagcac	cctggctgtg	gctgcctcct	120
tcattccaaga	gcagagtcca	tgttgggcca	ggagacttca	gatccatgtc	ctgggtgctgc	180
ctctggcttt	gtctttcctc	agtgggcagg	actgggtctg	ctgggtccatc	tttacccttc	240
tctgagctat	gcagccttgg	cctgctgcgt	ctccggcctg	tattctctcc	ccttactca	300
ggccctggga	aaccagccca	gtttctkgca	ggagaggcag	aggaggtcaa	tgcttttgc	360
ctgggcttcc	tgagcaccag	cagtgggtgtc	tctggagaag	atgaagtaga	gcccttacac	420
gatggagtgt	aagaggcaga	gaaaaagatg	gaagaagaag	gtgtgagtgt	gagtgaatg	480
gaggcaacag	gagcacaagg	accagcagg	gtagaagagg	ctgagggaca	cacagaggtg	540
acagaagcag	agggatccca	ggggactgct	gaggctgacg	ggccaggagc	atcttcaggg	600
gatgaggatg	cctctggcag	ggcagcaagt	ccagagtcgg	cctccagcac	ccctgagtct	660
ctccaggcca	ggcgacatca	tcagtttctt	gagccagccc	cagcgctg	tgctgcagtc	720
ttatcttcag	agcctgcaga	gcctctgttg	gtcaggcatc	cccctaggcc	cggaccacc	780
ggccccctgg	cccggcaaga	tccccacaag	gctggactga	gccactatgt	gaaactcttt	840
agcttctatg	ccaagatgcc	catggagagg	aaggctcttg	agatggtgga	gaagtgccta	900
gataaatatt	tccagcatct	ttgtgatgat	ctggagggtat	ttgctgctca	tgctggccgc	960
aagactgtga	agccagagga	cctggagctg	ctgatgcggc	ggcagggcct	ggctactgac	1020
caagtctcac	tgacagtgtc	agtggagcgg	cacctgcccc	tggagtaccg	gcagctgctc	1080
atccccctgtg	catacagtgg	caactctgtc	ttccctgccc	agtagtgggc	aggcttcaac	1140
actttccctg	tcccacttgg	ggactcttgc	ccccacatat	ttctccaggt	ctcctcccca	1200
ccccccagc	atcaataaag	tgtcataaac	agaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	1260
attggggggg	ggcccc					1276

<210> 29

<211> 2084

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (2075)..(2075)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (2083)..(2083)

<223> n equals a,t,g, or c

<400> 29

ggcagcagga	gttgtgcaga	tacctggctg	agagctggct	caccttccag	attcacctgc	60
aggagctgct	gcagtacaag	aggcagaatc	cagctcagtt	ctgcgttcga	gtctgctctg	120
gctgtgctgt	gttggctgtg	ttgggacact	atgttccagg	gattatgatt	tcctacattg	180
tcttgttgag	tatctgtctg	tggccccctg	tggtttatca	tgagctgac	cagaggatgt	240
acactgcgct	ggagccccctg	ctcatgcagc	tggactacag	catgaaggca	gaagccaatg	300
ccttgcacat	caaacacgcac	aagaggaagc	gtcaggggaa	gaatgcaccc	ccaggaggtg	360
atgagccact	ggcagagaca	gagagtgaag	gcgaggcaga	gctggctggc	ttctccccag	420
tggtggatgt	gaagaaaaca	gcattggcct	tggccattac	agactcagag	ctgtcagatg	480
aggaggtctc	tatcttggag	agtgggtggc	tctccgtatc	ccggggccaca	actccgcagc	540
tgactgatgt	ctccgaggat	ttggaccagc	agagcctgcc	aagtgaacca	gaggagaccc	600
taagccggga	cctaggggag	ggagaggagg	gagagctggc	ccctcccgaa	gacctactag	660
gccgtcctca	agctctgtca	aggcaagccc	tggactcgga	ggaagaggaa	gaggatgtgg	720
cagctaagga	aaccttgttg	cggctctcat	ccccctcca	ctttgtgaac	acgcatttca	780
atggggcagg	gtcccccaaa	gatggagtga	aatgctcccc	tggaggacca	gtggagacac	840
tgagccccga	gacagtgagt	ggtggcctca	ctgctctgcc	cggcaccctg	tcacctccac	900
tttgccttgt	tggaaagtgc	ccagccccct	ccccttccat	tctcccacct	gttccccagg	960
actcacccca	gccccctgct	gccccctgag	aagaagaggc	actcaccact	gaggactttg	1020
agttgctgga	tcagggggag	ctggagcagc	tgaatgcaga	gctgggcttg	gagccagaga	1080
caccgccaaa	acccccctgat	gtccaccccc	tggggcccca	catccattct	ctggtacagt	1140
cagaccaaga	agctcaggcc	gtggcagagc	catgagccag	ccgttgagga	aggagctgca	1200
ggcacagttag	ggcttcttgg	ctaggagtgt	tgcgtgttcc	tcctttgcct	accactctgg	1260
ggtggggcag	tgtgtgggga	agctggctgt	cggatggtag	ctattccacc	ctctgcctgc	1320
ctgcctgcct	gctgtcctgg	gcattggtgca	gtacctgtgc	ctaggattgg	ttttaaat	1380

gtaaataatt	ttccatttgg	gttagtggat	gtgaacaggg	ctaggggaagt	ccttcccaca	1440
gcctgcgctt	gcctccctgc	ctcatctcta	ttctcattcc	actatgcccc	aagccctggg	1500
ggctctggccc	tttctttttc	ctcctatcct	cagggacctg	tgctgctctg	ccctcatgtc	1560
ccacttggtt	gtttagttga	ggcactttat	aattttttct	ttgtcttggt	ttcctttctg	1620
ctttatttcc	ctgctgtgtc	ctgtccttag	cagctcaacc	ccatcctttg	ccagctcctc	1680
ctatcccgtg	ggcactggcc	aagcttttagg	gaggctcctg	gtctgggaag	taaagagtaa	1740
acctggggca	gtgggtcagg	ccagtagtta	cactcttagg	tcactgtagt	ctgtgtaacc	1800
ttcactgcat	ccttgcccca	ttcagcccg	cctttcatga	tgcaggagag	cagggatccc	1860
gcagtacatg	gcgccagcac	tggagttggg	gagcatgtgc	tctctcttga	gattaggagc	1920
ttccttactg	ctcctctggg	tgatccaagt	gtagtgggac	cccctactag	ggtyaggaag	1980
tggaactaa	catctgtgca	ggtgttgact	tgaanaataa	agtgttgatt	ggctagaaaa	2040
aaaaaaaa	aaaaaaaa	actcgagggg	gggcncggg	acnc		2084

<210> 30

<211> 1765

<212> DNA

<213> Homo sapiens

<400> 30

ggcacgagat	ttctgggagt	cctgcagagt	ctagttgcc	agtgggaacat	tcttaaaaag	60
atcgctcaga	agtttaccag	aattaaaaga	tgctgtcttg	gaccagtatt	caatgtgggg	120
aaataaat	ggagtattgc	ttttctgtga	ttctgtatta	ctgacaaagg	gcattgaaaa	180
cataaaaaac	gaaattgaag	atgcaagtga	acccttgata	gatcctgtat	atggacatgg	240
cagccaaagt	ttaattaatc	tcctgtgtac	gggacatgct	gtttctaag	tatgggatgg	300
tgatagagag	tgctcaggaa	tgaacttct	tggtatacat	gaacaagcag	cagtaggatt	360
tttaacacta	atgggaagctt	taagatactg	taagggtggg	tcttacttga	aatctccaaa	420
attccctatt	tggattgttg	gcagtgtgac	tcacctcacc	gtattttttg	ccaaggatat	480
ggctttagtt	gccccgaag	ctccttcaga	acaagccaga	agagtttttc	aaacctacga	540
cccagaagat	aatggattca	taccgattc	acttctggaa	gatgtgatga	aagcattgga	600
ccttgtttca	gatcctgaat	atataaatct	catgaagaat	aaattagatc	cagaaggatt	660
aggaatcata	ttattgggcc	catttcttca	agaatttttt	cctgatcagg	gctccagtgg	720
tccagaatct	tttactgtct	accactacaa	tggattgaag	cagtcaaatt	ataatgaaaa	780
ggctcatgtac	gtagaaggga	ctgcagttgt	gatgggtttt	gaagatccca	tgctacagac	840
agatgacact	cctattaaac	gctgtctgca	aaccaaatgg	ccatacattg	agttactctg	900
gaccacagat	cgctctcctt	cactaaatta	atgtgtctaa	gtatttataa	ggaagatctt	960
aataacagat	gttgaaagaa	ggagtcaaga	ctggcaattg	gctggattaa	gctaaacact	1020
ggtatcactg	attaactgta	aataacaatt	aaaaacacat	tttcagtgtt	tatgatattg	1080
ttaaatattt	tgtcctaaag	ctttatgtta	aagattatcc	tattttacc	cttcgtgtga	1140
aatttactag	caaaaattaag	ctttcatcaa	agttcatcac	ttttgcatc	agatacttgg	1200
tcatttactt	accaaattac	aaacgcaata	ctacagcatt	tgtatattaa	gtatcacagt	1260
tactattgat	aaactacttt	tgggttttat	ttcattgagg	cacttttttt	attggttgaa	1320
tgattccggc	ttgtaataata	tcagcctcta	caatgaaatg	cagaagagtt	catttttcta	1380
agatctgttt	ttcattagaa	atattgacaa	ataacacatt	gtcaacctgg	atcctttgac	1440
aatttactta	actctggcat	gttcacaaaa	agtagaaact	ctaagagacc	attaccattt	1500
attcacagat	gtataggggg	tgtattctaa	aaactgacag	aaaagagaat	ctgatagtca	1560
acactgttaa	cttttactgt	gtaattgcc	aatacacttt	tccaaatttg	tcccaacagc	1620
cctgtaagcc	agctttcttc	tatatattata	aacacgataa	atgcatgaga	agatctgtta	1680
ttacattagt	atattacggt	atttattatg	atcctagttg	atggcctaaa	taaacacctt	1740
tttctttaaa	aaaaaaaa	aaaaa				1765

<210> 31

<211> 2494

<212> DNA

<213> Homo sapiens

<400> 31

ggcacgagga	gatgtttaag	gattaccggc	cagccataaa	accatcctac	gatgtgctgc	60
tgctgctgct	gctgctagt	ctcctgctgc	aggccggcct	caacacgggc	accgccatcc	120
agtgcgtgcg	cttcaagggtc	agtgcagggc	tgagggtgct	atcctgggac	accagaaagc	180
gcccgcagga	gcgcctggct	ggggaggtgg	ccaggagccc	cctgaaggag	ttcgacaagg	240
agaaagcctg	gagagccgtc	gtggtgcaaa	tggccagtg	acccccagac	gcggaaaccg	300

```

ggtaggcagcg cccagcctgg ccccaagcat ggaaacgcac aaccctaat cgccctgagc 360
tactgcttct aacacctctt ttcccttggt tgagggcaaa ccaggctgca ggtgggggtt 420
tcacttccta gggtagttta attttaaaat aggccaatgt tggctagtct gtgcctcagt 480
gagatcagtc agctccgagt ggctcccgtg tcgtaacagc aggagcatgg ccgcaacttc 540
ccaggccgag gaaggggccc cggtcgggcc tcttgagagc cccaccctg aactggcccc 600
agctcctctt cctgcctctc tcatggcttg ggctggagtg ggctctctgg acctgaccag 660
actgtgggtc cctgcgtctc ctgcccactc tgaccgggct tctccctcc acgcttaggg 720
tctgtcccggt actcagtc agcccagtgg gatcttacc acttccctgc aaggtgcacc 780
tgcccaggc tcaggctgcc cagcggctct tcttgacag tgagagcagg gctgggcgcc 840
tctgtcctgg cccgggagcc gcaggggccc ctctccaga gcctgggcgc aagcgacaca 900
ggctgcccgt gctctcccag gtgaaatcca caccagtcca cgccgggtcg cctgcctgt 960
ctccctactt agaccagtc attctagagg gatccaccgc cactactggc ggccacgtc 1020
ctgggtgctg tcatgcccag ctgggagtgc cactgggctg ctgcccactg cccgggact 1080
gtcatgccc gcttggagtg ccacatggcc gctgcccacg tccggggcac tgtcacgcc 1140
agcttggagt gccacgtggc cgctgctgtg acaggcagtg ttcttggggg tggggctgca 1200
tcaaaggctt tgtaaaccgg ctggaccacg tctccctggc ccagtgacc gggggaagct 1260
gagccctcc ctctgtgtt tgcctccatt actcaaatg caggacagat caggctcagag 1320
cccaggaatt ctacaggtt caccagcgc cctctacctc ctacgaagta ctttgtctt 1380
atcctcactg agaaggccc agggcagcgg tctctccat ctccgtgtt ttgggtctt 1440
agggtacagc ccaggcggtc actgcccacc tgccaggctg caggacagat tgggtgtgag 1500
aataacactg gcttgggta gtgcatggc caggagtggg ttccctgcg tctcctcgtc 1560
ccgagggcgc ctgggtcctc ccagctgacg gcagtaaatc cacagttagt tggggcgact 1620
gtgaaactgg aatgctgtta ctttgataat tactttccag cagggtgttt ccttcacaat 1680
ggttttgtt ctttcttct gatctgagaa gacatgaacg ttttctctc accgccgtg 1740
ggtgtattga ctggtcccc atgggtgct ggaaaggccc ggagatgcat ctgtggcctg 1800
gggcatcaa gatcaaagaa ccaggaggcc tgggagatgc agctggatgg ggccgctgc 1860
agaccctgcc aggggtttg agggacctc cagggtttcc actgcggaac aggagttagt 1920
ctggctgcca agatacctt atggtgttca tgacaagtgg aatcattatt ttcaaccatt 1980
gaaggggat gcaggcaaga cacctccca gctgctccta gaggggacaa gccaggccct 2040
ctctgagtc ctccgagct ccggaaggac acagtcaggg gccgggcaaa cactttggcc 2100
acagcccaa acaagcgcca ccgtgggaga ggagaggctg ctgtcactgg taccgatgc 2160
agaccacc ctgtctgcag gccaccccca cctccctgca gctttagggc tggcgggtc 2220
tgctcctggg aatgggtgg gagccacagg gacgaccgg ggcgggtga tgtcttctg 2280
ggggcagacc agagagctca agtttcagag tcagaattag gcacttggag cgtttttgct 2340
ggcttgact ttctatttt cttattttag agcgcttaaa aaaatccgga aaaatgggt 2400
ttaaagaac tgtctcttc agtctacatt ttgtttaat acgcttgagc aataaacgct 2460
tacttgcaaa aaaaaaaaa aaaaaaaaa aaaa 2494

```

<210> 32

<211> 885

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (233)..(233)

<223> n equals a,t,g, or c

<400> 32

```

aattcgac gagaggctg catccttgg ttctgtgagc tctgcccgtt gggagcatcc 60
atgctgatgt gcaggggccg tgcagcactg cattcttctt gccttctctg ttctgtttag 120
tacaaccacc ccagcaggtc tccagttcct gccagggttag tgtggatggc ccagcaccat 180
ctcctctcca tcttgttggc tatcctctct tgctctcac aaccccgcca ggnctcgccg 240
tcaggagctc tgccgtgtga agtggtgctc gcagttctcc tcacatgtct acgcaaatc 300
tctggctccc tgtgtgtctg agcccaacag acacactgag cacaggagt ggctctcagc 360
tctcccgagc ttgccgtgac tgagccytgc cgtcctgtgg camcgccasg gagaccacag 420
tgtccaactg tccaaccttt acgtaattgg catcccagga ggagaagcaa gagtgaatgg 480
ggcagaaaa gatcattaaa gaaatcgtgg ctgacataaa aaaggatgag tcatgtcct 540
ttgtagggac gcgtggatga agctggaac catcattctg agcaaaactat cgcaaggaca 600
gaaaaccaa caccatgtgt tctactcat aggtgggaat tgaacaatga gatcacttgg 660
acacagggtg gggaacatca cacaccgggg cctgtcgtgg ggtgaggggg atggggcagg 720

```

```

gatagcatta ggagatatac ctaatgtaaa tgacgagtta atgggtgtca gcacaccaac 780
atggcacatg tatacatatg taacaaacct gcatgttgtg cacatgtacc ccagaactta 840
aagtataata aattaaaatt aaaaaaaaaa aaaaaaaact cgtag 885

```

```

<210> 33
<211> 790
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (37)..(37)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (55)..(55)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (76)..(76)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (112)..(112)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (120)..(120)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (137)..(137)
<223> n equals a,t,g, or c

```

```

<400> 33
tcaactgggt gaaaaggaaa acccaccctt ggcgccnaat acgcaaaccg ccttntcccc 60
ggcgcggttg ccgatncatt aatgcagctg gcacgacagt tttcccgact gnaaagcggn 120
cagtgcgcgc aacgcantta aatgtgagtt agctcactca ttagcacccc aggetttaca 180
ctttatgctt ccggctcgta tgttgtgtgg aattgtgagc ggataacaat ttcacacagg 240
aaacagctat gaccatgatt acgccaagct ctaatacgac tcactatagg gaaagctggt 300
acgcctgcag gtaccggtcc ggaattcccg ggtcgaccca cgcgtccggt tgaatgcact 360
gagtccttgg gtgtagtagc aataaggaaa aatgaaatta ctttcctgtg cacacagtcc 420
agcctaattg gtatgtgatg ttgcacttag cagccatgtg gtgggcatgt gtgactactc 480
tggttttcac tttagtttct aaacttttta tcctctctca gtccagcatg gatggggaaa 540
tgtctctgga tccccacagc tgtgtacttg tttgcatttg tttccctttg agatttgtgt 600
ttgtgtcctg ctttgagctg taccttgtcc agtccattgt gaaattatcc cagcagctgt 660
aatgtacagt tccttctgaa gcaagcaaca tcagcagcag cagcagcagc agcacaattc 720
tgtgttttat aaagacaaca gtggcttcta wwaaaaaaaa aaaaaaaaaa aaaaaaaaaa 780
aaaaaaaaaa 790

```

```

<210> 34
<211> 1343
<212> DNA
<213> Homo sapiens

```

```

<400> 34

```

```

ggcacgaggt caaggcaaaa atgggtcagg tttggagagt tccccactc cttttgagtg 60
ttcaggtttt ccttaccatg gctcatgctt tccatcaagc accagagttg cagtggcttg 120
gcctctggtt ctgggtgagg ttatattgcag gtggagacgg ggggctgcac ctgaacattt 180
ctagtgtcac cctccctctc cttcatggga aacagctctc cagggaagta ccttcctgcc 240
aggggaagcc aaggctgggc cgcccgccct acaaggagcc acaggattgc agccatgggt 300
gccacctttc atggaagggg agatttatgg gctttcctgg aacccccagg ctgtcctggc 360
caagaggaaa gaggtggtta cttcaggagt ttgaccttag ttagataact aaaagaatac 420
atttcccctc ccttttcttt atttccctca taaaaatgta caaagtatca cccttctcca 480
tgccccaatc tgtgttaaag tcacaatcta tgggtgtagt tctgggattc tgtcaaattc 540
tccttcctgc tctccaaaat ggacaattgt cgtagggacc acatgcccc agaatacaat 600
ggcctctgtg tcttactggg gtcaagcctg ctagaactca gcattcatga caggggctaa 660
gtgtcagctg agtcagactg actacagcta gaaagccagg cgcacaaatg ccccttcccc 720
ccagggccgc tctttccagc gcagtcaccc agaaaggccc acgtgcagag cccctgtgtc 780
tcagatgctg cttcagttgc ccgtcctgtc ctcagaggcc actgtgctgg cctctatca 840
tttgacctga ctttagaacc tgacctcaag gatattggcag cgctagcctt tagctccac 900
agcacggatg ggggtgatgc cagttagaag tgggtagtag acgtttgctg agctgttcac 960
tgtttctctc ttctctttgg aagcacctct ccgagccatg tgagccccct gatgccaccg 1020
agcaggggca gctcatgac cgatgtctgt ctgaggctgt ggcggacact ctcggggttg 1080
tctgcaggag agcaagccag gaggacatgg gcctggacga cacggcctcg cagcaaagtg 1140
tgtcagacga gcagtgcagg gcgtgcggcc gggcggggag gctggctccc ccacacctcc 1200
cacctgcatt gctctccctc gtgtccccc aatcaccaca accaaccaat accgcaatcc 1260
atgagggact cctctgtgg aaaaggagag ctgttccaga acacagaact gatctcaggt 1320
ttttgaaaaa aaaaaaaaaa aaa 1343

```

<210> 35

<211> 1089

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (353)..(353)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (528)..(528)

<223> n equals a,t,g, or c

<400> 35

```

cggcacgaga aacgcggtgc ttgctcctcc cggagtggcc ttggcagggt gttggagccc 60
tcggtctgcc ccgtccggtc tctggggcca aggtctgggt tccctcatgt atggcaagag 120
ctctactcgt gcggtgcttc ttctccttgg catacagctc acagctcttt ggccatagc 180
agctgtggaa atttatacct cccgggtgct ggaggctgtt aatgggacag atgctcgggt 240
aaaatgcact ttctccagct ttgccctgtt ggtgatgct ctaacagtga cctggaattt 300
tcgtcctcta gacgggggac ctgagcagtt tgtattctac taccacatag atnccctcca 360
acccatgagt gggcggttta aagaccgggt gtcttgggat gggaatcctg agcggtagca 420
tgcctccatc cttctctgga aactgcagtt cgacgacaat gggacataca cctgccagggt 480
gaagaaccca cctgatgttg atggggtgat aggggacatc cggctcancg tcgtgcacac 540
tgtacgcttc tctgagatcc acttctctgc tctggccatt ggctctgcct gtgcactgat 600
gatcataata gtaattgtag tggctctctt ccagcattac cggaaaaagc gatggggcca 660
aagagctcat aaagtgttgg agataaaatc aaaagaagag gaaaggctca accaagagaa 720
aaaggtctct gtttatattag aagacacaga ctaacaattt tagatggtaa gggtcacaaa 780
taggttgatt tctttcttca gctttctgac atgtccagcc catctctaag gaggactccc 840
agatcatcac tttatggctg ttaggtgttt cccatatgaa attagaggag ctgggtcagg 900
gagacaaaag tcttctatta gtcttatgga tagctcctcc ttgagtgtat tttgtgcaaa 960
agattaagaa gctggactct actgccatta aagctgagag aatcctaagg ttaaaaaaaa 1020
aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1080
aaaaaaaaaa 1089

```

<210> 36

<211> 875
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (66)..(66)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (872)..(872).
 <223> n equals a,t,g, or c

<400> 36
 ggcacagcgc gaggtgggt cccggcccag gagaaggaag tcgctgaagg cagtggccat 60
 gctggncgtg gaaatgggag gcggttgag rgggtctatg gggcccgtc ctggatactc 120
 ggcaggaagc cgtgtctgca gaggtcctc cctgcctcag gtggcccgt tcaaccccag 180
 ccgtgccat ctctgccac cgctgtcgg tgggggttta aattcgggtg ggctttctgg 240
 ggtgcagctc agcaccccc cttatgcaga ctgggagggg gtcgggcagt cccctcagcc 300
 acgaggacc cttatgggtt ctagtctact tgggaccgtg gggcctggct gcgtactgag 360
 tgggtgcccc acagtcaagg ccaacggggg ctccccctgc tctgagatgt tgggagaaag 420
 gcggcttctg gaaccttccg tgggaccctg aagtggctgt ccagaaaggc gggagggtgg 480
 gcacggggca cggggggcag ctggggtcgt cgttaagggt cagcatccg tacagttgaa 540
 ttctctttct cttatcatgt ttaccacc ttgtccctt ttccccaat tgtgcttttg 600
 catttttttc cttggcaaat gtaaaactcag cctttcattc atgacgtgtg aaatttcagt 660
 ttctctggag tttgtcagac ggcgtgggaa ccacgcctga aactcaggta ataggaggaa 720
 aaaaaaaaaa cttaaaaaaa tttttaaaaa acataaaact actctctacc tctgctggsc 780
 cagcctgtct cgccctggcc gcggcagggg ggccgtgtaac aatttcagtt ttcgcagaac 840
 attcaggtat taaaaggaaa aaaaaaaaaa anggg 875

<210> 37
 <211> 320
 <212> DNA
 <213> Homo sapiens

<400> 37
 agggcgcagc gccaatlgat gggcatgac cttgtgctgg cgagcttcct ggcgcacccg 60
 gtcgaggcgc tcgcgcaagc tgtcgcgctg ggccagcagc aactcgcgct gctcgggtgts 120
 carrgccatg ctgtcgaggg cttcctgcaa ttgcagrcgt gcttcgccgr cttgttctgtg 180
 ttcgargggc cgttgcctgc ccattctcgg cacttcttcg tcgagccggg tgcggcgagc 240
 ggtcagttgc tcgaccttgg ccttgytcgc cgagagctgg gctttcaatt cgccctgctg 300
 gcgcgcttcg tctcgcaaca 320

<210> 38
 <211> 710
 <212> DNA
 <213> Homo sapiens

<400> 38
 ggcacgagct gggcctccag gttcttcacc tgtcacatga tcattttaca tattgtggtc 60
 tgtttattta ccatcagcat catagaagag caaaaagaag aaatactgtg ctccactaaa 120
 agccaggctg agaaaacagt tactcacatt gagcagtgag tgaccactag gtgggcattt 180
 gttcatagct gcatggagaa caagtgccca tatacatctt tctgctgatg cagcctctaa 240
 attttgaatg catcagtttt ttaaaactgca ttgagcaata ttccgtgggt gtgatccata 300
 atagcgtaac tatttacgcc tgtgacagag agggaaaactg tatggatc agatatcttt 360
 aagagctttt taatctttaa tcaagttagt acttcttaag gatgattaag gccaggcagt 420
 ggctcacacc tgtaatccca gcattttggg agggcaagat ggggtggatc ctttaaggta 480
 agagttcaag gccatcctgg ccaacatggg gaaaccccat ctctactaaa aatacaaaaa 540
 ttagctgggg tgtggtggca ggcgcctgta accccagcta ctcaagaggc tgagacaaga 600
 gaatcgcttg aagccaggag ttggagattg cagtgcagca agatcatgcc acttcactcc 660

agcctggaca gcagagtggg acttcttctt aaaaaaaaaa aaaaaaaaaa 710

<210> 39

<211> 1421

<212> DNA

<213> Homo sapiens

<400> 39

ggcagagggga	gcggagagcg	tgctaaccaa	tgacttgagg	gagtaggggg	ccgggtttgg	60
gccctcagtt	gctaagggct	acccgagtg	gaagcgggtc	aagagatggg	gtgaaggggtg	120
gttcaccggg	tcttcaagtc	ctcagccttc	tggcccggg	aagttaagca	accaagaggc	180
gggcctaaga	ccggaagcag	gaaggagggc	gcaggaagca	gggcgcgcga	gcctgtcgta	240
cggtccttct	gtgggtctgt	cgggtgccgag	ggcaggatgg	agaagctgcg	gctcctgggc	300
ctccgctacc	aggagtacgt	gactcgtcac	ccggccgcca	cggcccagct	ggagacagca	360
gtcgggggct	tcagttacct	gctggcaggt	cgattcgccg	attcgcacga	gctgtcagag	420
ctggtgtact	ctgcctctaa	cctgcttgtg	ctgctcaatg	acgggatcct	acggaaggag	480
cttcggaaaa	agttgcctgt	gtcgtctgtc	cagcagaagc	tgctgacatg	gctgagcgtg	540
ctggagtcgc	tggagggtgt	catggagatg	ggagctgcca	aggtgtgggg	tgaagtgggc	600
cgtgggcttg	tcacgccttc	catccagctg	gccaaggctg	tactgcggat	gctcctgctg	660
ctctgggttca	aggctggcct	ccagacttca	ccccctatcg	ttccactgga	cagagagacc	720
aggcacagcc	cccggatggg	gaccacagcc	ywggyaacca	tgagcagtc	tacgtgggga	780
agcgggtcaaa	ccgggtgggtg	cgaacctccc	agaacacgcc	gtccctgcac	tccaggcact	840
ggggagctcc	ccagcagcgg	gagggacggc	agcagcagca	tcacgaggag	ctgagtgcga	900
ccccacccc	cctggggcct	gcaggagacc	atcgcagagt	ttttgtacat	tgcccggccg	960
ctgctgcact	tgctcagcct	gggcctkttg	gtgcarargt	cgtggaaacc	ctggctcttg	1020
gctggtgttg	tggacgtgac	cagcctgagc	ctcctgagt	acagaaagg	cctgacccgg	1080
arggagcggc	gggagctgcg	gcgccggamc	atcctgctgc	tctactacct	gctgcgctct	1140
cctttctacg	accgcttctc	cgaggccagg	atcctcttcc	tgctccagtt	gctggccgac	1200
cacgtccctg	gcgttggcct	ggtcacaagg	ccgctcatgg	attacttgcc	cacctggcag	1260
aaaatctact	tctacagttg	gggctgacag	actcccggaa	ggaggggtgtg	gggaggggtg	1320
ggcagggagc	ccctcttccc	taataaaact	gactccggca	gcaaaaaaaaa	aaaaaaaaaaa	1380
aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaagggcggc	c		1421

<210> 40

<211> 3447

<212> DNA

<213> Homo sapiens

<400> 40

accaattccc	ttcctgggag	ttgcggcttc	cctcgctcgg	ccccactccc	gtttaccctt	60
tccccagctc	ccgccttagc	caggggcttc	ccgcctgcgc	gctagggctc	gggcccgaagc	120
gccgctcagc	gccagcctgc	cgtcccccg	gtccactttt	cactttcggg	cctgggggaa	180
ctaagccgga	ggcagtggtg	gtggcggcgg	cgcaaggggtg	agggcggccc	cagaacccca	240
ggtaggtaga	gcaagaagat	ggtgtttctg	ccctcaaat	ggtcccttgc	aacctgtca	300
tttctacttt	cctcactggt	ggctctctta	actgtgtcca	ctccttcacg	gtgtcagagc	360
actgaagcat	ctccaaaacg	tagtgatggg	acaccatttc	cttggaataa	aatacgaactt	420
cctgagtacg	tcattcccag	tcattatgat	ctcttgatcc	atgcaaacct	taccacgctg	480
accttctggg	gaaccacgaa	agtagaaatc	acagccagtc	agcccaccag	caccatcatc	540
ctgcatagtc	accacctgca	gatatctagg	gccaccctca	ggaagggagc	tggagagagg	600
ctatcgggag	aacccttgca	ggtcctggaa	cacccccctc	aggagcaa	tgactgctg	660
gctcccagag	ccctccttgt	cgggctcccg	tacacagttg	tcattcacta	tgctggcaat	720
ctttcggaga	ctttccacgg	attttaca	agcacctaca	gaaccaagga	aggggaactg	780
aggatactag	catcaacaca	atttgaacc	actgcagcta	gaatggcctt	tccctgcttt	840
gatgaacctg	ccttcaaagc	aagtttctca	atcaaaatta	gaagagagcc	aaggcaccta	900
gccatctcca	atatgccatt	ggtgaaatct	gtgactgttg	ctgaaggact	catagaagac	960
cattttgatg	tcactgtgaa	gatgagcacc	tatctggtgg	ccttcatcat	ttcagatttt	1020
gagtctgtca	gcaagataac	caagagtggg	gtcaagggtt	ctgtttatgc	tgtgccagac	1080
aagatgaatc	aagcagatta	tgcactggat	gctgcgggtg	ctcttctaga	attttatgag	1140
gattatttca	gcataccgta	tcccctaccc	aaacaagatc	ttgctgctat	tcccgaacttt	1200
cagtctggtg	ctatggaaaa	ctggggactg	acaacatata	gagaatctgc	tctgttggtt	1260
gatgcagaaa	agtcttctgc	atcaagtaag	cttggcatca	caatgactgt	ggcccatgaa	1320

ctggcccacc	agtgggtttg	gaacctggtc	actatggaat	gggtggaatga	tctttggcta	1380
aatgaaggat	ttgccaaatt	tatggagttt	gtgtctgtca	gtgtgacca	tcctgaactg	1440
aaagttggag	attatttctt	tggcaaatgt	tttgacgcaa	tggaggtaga	tgctttaaat	1500
tcctcacacc	ctgtgtctac	acctgtggaa	aatcctgtct	agatccggga	gatgtttgat	1560
gatgtttctt	atgataaggg	agcttgtatt	ctgaatatgc	taagggagta	tcttagcgct	1620
gacgcattta	aaagtgggtat	tgtacagtat	ctccagaagc	atagctataa	aaatacaaaa	1680
aacgaggacc	tgtgggatag	tatggcaagt	atgtgcccta	cagatgggtg	aaaagggatg	1740
gatggctttt	gctctagaag	tcaacattca	tcttcatcct	cacattggca	tcaggaaggg	1800
gtggatgtga	aaacctgat	gaacacttgg	acactgcaga	ggggttttcc	cctaataacc	1860
atcacagtga	gggggaggaa	tgtacacatg	aagcaagagc	actacatgaa	gggctctgac	1920
ggcgccccgg	acactgggta	cctgtggcat	gttccattga	cattcatcac	cagcaaatcc	1980
gacatgggtc	atcgattttt	gctaaaaaca	aaaacagatg	tgctcatcct	cccagaagag	2040
gtggaatgga	tcaaatttaa	tgtgggcatg	aatggctatt	acattgtgca	ttacagggat	2100
gatggatggg	actccttgac	tggcctttta	aaaggaacac	acacagcagt	cagcagtaat	2160
gacggggcaa	gtctcattaa	caatgcattt	cagctcgtca	gcattgggaa	gctgtccatt	2220
gaaaaggcct	tgattttatc	cctgtacttg	aaactgaaa	ctgaaattat	gcccgtgttt	2280
caaggtttga	atgagtgat	tcctatgtat	aggttaatgg	agaaaagaga	tatgaatgaa	2340
gtgaaaactc	aattcaaggc	cttctctatc	aggctgctaa	gggacctcat	tgataagcag	2400
acatggacag	acgagggctc	agtctcagag	cgaatgctgc	ggagtgaact	actactcctc	2460
gcctgtgtgc	acaactatca	gccgtgcgta	cagagggcag	aaggctattt	cagaaaagtg	2520
aaggaatcca	atggaaactt	gagcctgcct	gtcgacgtga	ccttggcagt	gtttgtctgt	2580
ggggcccaga	gcacagaagg	ctgggatttt	ctttatagta	aatatcagtt	ttctttgtcc	2640
agtactgaga	aaagccaaat	tgaatttgcc	ctctgcagaa	ccaaaataa	ggaaaagctt	2700
caatggctac	tagatgaaag	ctttaaggga	gataaaaata	aaactcagga	gtttccacaa	2760
attcttacac	tcattggcag	gaaccagta	ggatacccac	tggcctggca	atttctgagg	2820
aaaaactgga	acaaacttgt	acaaaagttt	gaacttggct	catcttccat	agcccacatg	2880
gtaatgggta	caacaaatca	attctccaca	agaacacggc	ttgaagaggt	aaaaggattc	2940
ttcagctcct	tgaagaaaa	tggttctcag	ctccgttgtg	tccaacagac	aattgaaacc	3000
attgaagaaa	acatcggttg	gatggataag	aattttgata	aaatcagagt	gtggctgcaa	3060
agtgaaaaagc	ttgaacgtat	gtaaaaattc	ctcccttgcc	aggttccgtg	tatctctaata	3120
caccaacatt	ttgttgagtg	tattttcaaa	ctagagatgg	ctgttttggc	tccaactgga	3180
gatacttttt	tccttccaac	tcattttttg	actatccctg	tgaaaagaat	agctgttagt	3240
ttttcatgaa	tgggctatcg	ctaccatgtg	ttttgttcat	cacaggtgtt	gccctgcaac	3300
gtaaacccaa	gtgttgggtt	cctgccaca	gaagaataaa	gtaccttatt	cttctcattt	3360
tatagtttat	gcttaagcac	ccgtgtccaa	aacctgttac	cccatgttta	tcattcataa	3420
actgtttcat	cagttctcaa	aaaaaaa				3447

<210> 41

<211> 3037

<212> DNA

<213> Homo sapiens

<400> 41

aattcggcag	agcctaggag	gagaaagttc	catcatgtcg	gagatcagag	gaaaacccat	60
tgagtccagc	tgtatgtatg	gcacctgctg	cctctgggga	aagacttatt	ccatcggatt	120
tctgagggtc	tgcaaacagg	ccaccctgca	gttctgtgtg	gtgaagccac	tcattggcgt	180
cagcactgtg	gtcctccagg	ccttcggcaa	gtaccgggat	ggggactttg	acgtcaccag	240
tggctacctc	tacgtgacca	tcattctaaa	catctccgtc	agcctggccc	tctacgcctt	300
cttctctctc	tacttcgcca	cccgggagct	gtcagccccc	tacagccccc	tcctcaagtt	360
cttcatgggtc	aagtcctgta	tctttctttc	cttctggcaa	ggcatgctcc	tggccatcct	420
ggagaagtgt	ggggccatcc	ccaaaatcca	ctcggcccg	gtgtcgggtg	gcgagggcac	480
cgtggctgcc	ggctaccagg	acttcatcat	ctgtgtggag	atgttctttg	cagccctggc	540
cctgcggcam	gccttcamct	acaaggtcta	tgtcgacaag	aggctggacg	cacaaggccg	600
ctgtgcccc	atgaagagca	tctccagcag	cctcaaggag	accatgaacc	cgcacgacat	660
cgtgcaggac	gccatccaca	acttctcacc	tgcctaccag	cagtacacgc	agcagttcac	720
cctggagcct	gggccacact	ggcgtgggtg	cgcgccacgg	ctctcccgct	cccacagcct	780
cagtggcgcc	cgcgacaacg	agaagactct	ctgctcagc	tctgatgatg	aattctagggt	840
gctgggtgca	gtggcggaag	tgtgtggcgc	atagccacgg	tcaggctgtg	ccccacctcc	900
agcctcacca	ccaggccagg	aggcagctgg	cacagtgtct	acgccgcctt	tatttatgtg	960
accagaaaca	ctcacatgtc	gcttccagag	gaacggggga	cagccaggct	cgcccatggg	1020
ccttcaggaa	tatttatata	tggccacg	tgcactgccc	gggcgagggc	agaggacact	1080

gggagcaagg	cttatgcccc	tgetgcccgt	cctgtgctgg	gggcatgctg	ggaccagccg	1140
cacccaggcc	ccaatgcttg	tgtgtggacc	agcggctgca	gccttctagc	ccctcctccc	1200
cgcgagactc	tcaggctgag	gtcggcaagc	cgtggctccc	ccacacaccg	tgcaataccc	1260
tgtctgacct	gggtctcttc	cgcctgcatc	cctyccctgt	ccacetttgt	ccagtgtag	1320
attcacctca	ccccgggcag	gagtggggat	gtgggcgtc	tgtggtcctc	ccctcctgac	1380
ccaggcctct	gtggcatgct	gcaaggatca	gagccagaca	ccaggagtca	caggccccac	1440
ccaggaaggg	cattcagggc	ccctgggcac	cgcttctgtt	gaagcagggg	cttctggggc	1500
cctgggtatc	cccacctgtc	gtggccacac	ctctgcctgc	ctcatgcccc	ttccccctgg	1560
cctaccaagg	acagcccaca	gcccgcactg	ccggctcact	tgggtccttc	ctcgataget	1620
ttgggcagag	cccttgcttc	ctggctgctt	cagggctcag	gggctcccag	ccctccttcc	1680
cagactgatg	ctgggtcctc	tctctctttg	gggttcttcc	ctcccgtttc	aggggaaggg	1740
tctgagtctc	cacgtttcag	accagcttct	gggggaaggg	agtccggcag	ggagaccggg	1800
aggggtggcc	acacagtggg	gagctgggag	gtggggggaa	tgggtcccaga	ctcctctcgg	1860
ggccctatc	cacacagggc	ctgggtgttct	accccatctg	gcccctggcc	catctcttct	1920
gtgccttagt	cacatatgaa	agcgcctctc	cctggctccc	catctgtccc	acacgctccc	1980
tggggctctt	agttcagctg	ctggcactcg	caggatcctg	cagtgtgggg	cccagagccc	2040
ttggacaggg	ctcaggagtg	gtcaggacca	ccaagccctc	cctctcccc	tccacacctc	2100
tagacctggg	gcctccggaa	ccccagcag	gctgggctta	tactagctcc	tgacttagga	2160
agagcctcgt	gtcacaacac	gtgtccctac	aggcaaagtg	tcctggcatt	taaaaccag	2220
attatccctg	ggtttgggct	gcagtcacct	ggagaagctg	gtagggttaag	ggagaggggac	2280
cctgcccgtg	ttcactgggg	attctttctt	ttggctcctc	ctggaatgaa	caggttccct	2340
ccctgccacc	tgtgaggaga	gttggggccc	agccgtcttc	ctggcctcct	tcctttcttc	2400
gtggcagagg	cctgcatgtg	ggtgccagag	gccagctctc	cccctccatc	ttgggggggg	2460
ggagcagttg	ggcccaagct	gcccgggagg	gtgggtgcag	acacaggctg	aggaccagcc	2520
ctggccctgc	cccgcctctc	gctttcacca	agctgtctct	ccaccgtggc	ttcccttctc	2580
cctccaggcc	aaagtgtctg	tgattccctc	tcctttgggt	ttcgctgtcc	cagcgttgct	2640
gtttgcgtgg	aggggtgggg	gagctcagtg	gcagggaatc	agcgggtccg	ggggctcgtg	2700
ggacgggaac	atgtgcccga	ccgctccatc	ccctcctcct	ccttaggatg	cataacctac	2760
cttgtctttt	tttttttaaa	ttttcttttc	aggtagagta	gctcttttga	cataaagaat	2820
acttgaaaaa	ttaattgtat	gatgtatgag	aagacagagt	ctcctagttt	tgtatcttgt	2880
tgtatgactg	ccatgagttc	caccagaaag	ccactctatt	ttggctctct	tgacatttta	2940
aatgcgtgac	agaagtgagc	aaataaagtg	aggaagaaat	ctaaaaaaa	aaaaaaaaaa	3000
aaaaaaaaaa	aaaaaaaaaa	aaaaaaaggg	cggccgcg			3037

<210> 42

<211> 767

<212> DNA

<213> Homo sapiens

<400> 42

catgaaaaca	cattctctta	tagtttttaa	attcatcatc	caagagttcc	tgtcttttga	60
tgatgagaca	tacctggtag	actccaaaac	agagagcaga	cgcctagtag	ctttgttctg	120
gggtgtgcat	taagagtaca	ttgacctgtc	tgtctccagt	cttgactctt	ttggaagaga	180
gatgctagta	ctgatgacaa	cctgcattct	ggctgcgggt	tgygtccaca	ctgcacagtg	240
tgcaccagac	tctcgtatgg	acaatgactg	tcctccacat	caggcgcaga	tccattttag	300
agcctcagaa	gtcaggagag	ggtggacttt	caaccacgac	tgaaaacact	gtctttctta	360
ggacatgctg	tgtgtatgac	acacttacag	atgtctgtgc	tcactgatgc	ttgttgatgt	420
gtcatcgcac	atcagtgaca	aacattttgt	atgtttttgc	ctttgggtga	acttctttat	480
tatactcact	ttctctccaa	accatttttc	tcaacttcat	catgaagcaa	atgtcatgtg	540
gtcattctgt	gatggggctc	agggttaggt	taggtgatga	tttctgaaag	ctcagagacg	600
tgaaggaaaa	aggacatcag	tgcttggtat	ttagctctta	taagcctcac	gtgcaacaat	660
aaacccgagt	tcaagaatca	gattcttaga	tagattgggt	tggtagcaaa	tgacaaaaaa	720
ccaacgtaaa	tatgcttcgg	caaaaaaaaa	aaaaaaaaag	ggcggcc		767

<210> 43

<211> 1057

<212> DNA

<213> Homo sapiens

<400> 43

tcgacccacg	cgtccgctga	gattacaggt	gtgagccacc	aggctcagcc	ccctaagatt	60
------------	------------	------------	------------	------------	------------	----

tgaaacactt	taaatggccc	atggttagggt	tcctgctagg	ataaaacatt	aagcggctgt	120
taaaagaat	aaaaggagga	cacgtctctg	tgcactgggtg	tggaacaaatc	tccaagtcac	180
tgcaaaatgg	aaaaagtata	agatgctctt	tccctgaacc	tcaagggtcc	cgccctctc	240
actttcaggt	ctctggacct	ctgactgaca	ctgtgcctgc	ccagggtccct	gtatgcactg	300
ccacagtgcc	ctgggcccga	tgccacccc	tgctctgccc	ttctctggga	tagggctggc	360
cttctctgc	ctctgcctgg	ctgcatccat	ggctgatctc	aagtgccttg	gcatgaactc	420
cactctcctg	cagccttcaa	tcaaggaatg	atggggatgt	gtacataccc	cacccaccc	480
cttggcaggg	tgatgctgag	gtgtggattt	ttaacagttc	ccagactttc	ccaggaggct	540
tgggtttggg	tgcccacagt	gggagctggg	gtgatatcat	accttcgccg	gccgccttct	600
cttctgttc	tctgtgccc	tactcccact	ctagagctgc	ccggtttctc	tgttttcgtg	660
aaagagctga	ccctgtgctg	cctcccactc	tcccaatgcc	cctgccactc	ctgtgagcct	720
gctgctggtg	aggtcgggtg	tgacctctgt	gttgcctggat	aatgagtcac	ctatctctgg	780
aggagaagaa	aggcaggtcc	tccacagccc	tgataaaatc	tccaagtctc	ccagtttcgg	840
gtccctctcc	tgggatgcag	acccactgcc	tgcccagctg	gtacgatcca	catgccctct	900
tcttgggaat	aggggcatgg	gaaagtgact	aaagatactg	ttctggctgc	tgtgttctact	960
gtgagtaata	aactgtccat	ttctccgaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	1020
aaaaaaaaaa	aaaaaaaaaa	aaaaaaaggg	cggccgcg			1057

<210> 44

<211> 2687

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1614)..(1614)

<223> n equals a,t,g, or c

<400> 44

gtacaccatg	ggcctccacc	tccgccccta	ccgtgtgggg	ctgctcccgg	atggcctcct	60
gttctctctg	ctgctgctaa	tgtgctcg	ggaccagcg	ctcccggccg	gacgtcaccc	120
cccagtggtg	ctgggtccctg	gtgatgttggg	taaccaactg	gaagccaagc	tggaacagcc	180
gacagtgggtg	cactacctct	gctccaagaa	gaccgaaagc	tacttcacaa	tctggctgaa	240
cctggaactg	ctgctgcctg	tgcatcattg	actgctggat	tgacaatatc	aggctgggtt	300
acaacaaaac	atccaggggc	accagtttc	ctgatgggtg	ggatgtacgt	gtccctggct	360
ttgggaagac	cttctcactg	gagttcctgg	accccagcaa	aagcagcgtg	ggttcctatt	420
tccacaccat	ggtggagagc	cttgtgggt	ggggtacac	acggggtgag	gatgtccgag	480
gggtcccta	tgactggcgc	cgagcccaa	atgaaaacgg	gccctacttc	ctggccctcc	540
gcgagatgat	cgaggagatg	taccagctgt	atggggggccc	cgtgggtgctg	gttgcccaca	600
gtatgggcaa	catgtacacg	ctctactttc	tgacgaggca	gccgcaggcc	tggaargaca	660
agtatatccg	ggccttcgtg	tactgggtg	cgccctgggg	gggcgtggcc	aagaccctgc	720
gcgctctggc	ttcaggagac	aacaaccgga	tccagtcac	cgggcccctg	aagatccggg	780
agcagcagcg	gtcagctgtc	tccaccagct	ggctgctgcc	ctacaactac	acatggtcac	840
ctgagaaggt	gttcgtgcag	acaccacaa	tcaactacac	actgcgggac	taccgcaagt	900
tcttccagga	catcggtctt	gaagatggct	ggctcatgcg	gcaggacaca	gaagggctgg	960
tggaagccac	gatgccacct	ggcgtgcagc	tgactgcct	ctatgggtact	ggcgtcccca	1020
caccagactc	cttctactat	gagagcttcc	ctgaccgtga	ccctaaaatc	tgctttgggtg	1080
acggcgatgg	tactgtgaac	ttgaagagtg	ccctgcagtg	ccaggcctgg	cagagccgcc	1140
aggagcacca	agtgttgctg	caggagctgc	caggcagcga	gcacatcgag	atgctggcca	1200
acgccaccac	cctggcctat	ctgaacgtg	tgctccttgg	gccctgactc	ctgtgccaca	1260
ggactcctgt	ggctcggccg	tggacctgct	gttggcctct	ggggctgtca	tgggccacgc	1320
gttttgcaaa	gtttgtgact	caccattcaa	ggccccgagt	cttggactgt	gaagcatctg	1380
ccatggggaa	gtgctgtttg	ttatcctttc	tctgtggcag	tgaagaagga	agaaatgaga	1440
gtctagactc	aagggacact	ggatggcaag	aatgctgctg	atggtggaac	tgctgtracc	1500
ttaggactgg	ctccacaggg	tggactggct	gggccctggg	cccagtcctt	gcctggggcc	1560
atgtgtcccc	cctattcctg	tgggcttttc	atacttgctt	actgggcctt	ggcncsgcag	1620
ccttccctatg	agggatgtta	ctgggctgtg	gtcctgtacc	cagaggctcc	agggatcggc	1680
tcctggcccc	tgggtgacc	cttcccacac	accagccaca	gataggcctg	ccactgggtca	1740
tgggtagcta	gagctgctgg	cttccctgtg	gcttagctgg	tggccagcct	gactggcttc	1800
ctgggcgagc	ctagtagctc	ctgcaggcag	gggcagtttg	ttgcgttctt	cgtgggtccc	1860
aggccctggg	acatctcact	ccactcctac	ctcccctacc	accaggagca	ttcaagctct	1920

```

ggattgggca gcagatgtgc ccccagtccc gcagctgtgt tccagggggc ctgatttcct 1980
cggatgtgct attggcccca ggactgaagc tgccctccct caccctggga ctgtgggtcc 2040
aaggatgaga gcaggggttg gagccatggc cttctgggaa cctatggaga aagggaatcc 2100
aaggaagcag ccaaggctgc tcgcagcttc cctgagctgc acctcttgct aacccacca 2160
tcacactgcc accctgccct agggctctac tagtaccagg tgggtcagca cagggtgag 2220
gatggggctc ctatccacc tgccagcac ccagcttagt gctgggacta gccagaaac 2280
ttgaatggga ccctgagaga gccaggggtc ccctgaggcc cccctagggg ctttctgtct 2340
gccccagggg gctccatgga tctccctgtg gcagcaggca tggagagtca gggctgcctt 2400
catggcagta ggctctaagt gggtgactgg ccacaggccg agaaaagggt acagcctcta 2460
ggtaggggttc ccaaagacgc cttcasgctg gactgagctg ctctcccaca gggtttctgt 2520
gcagctggat tttctctgtt gcatacatgc ctggcatctg tctccccttg ttccctgagt 2580
gccccacatg gggctctgag caggctgtat ctggattctg gcaataaag tactctggat 2640
gctgtaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa ggcggcc 2687

```

<210> 45

<211> 728

<212> DNA

<213> Homo sapiens

<400> 45

```

aaatgattta gtgacctata caagtagcct gcagtaccgg atccgaattc ccggtcgacc 60
cacgcgtccg gtgaaaacag cagagtgtga ctccatacca ctgggatctt gtccagtaaa 120
catccagaga gtgaggttag gaaataaaaa gtatataaat attagatgcc tagaaatgca 180
agtcacttta aagattttat gtgaaataga aaaaaaagag aggagaggga ctcatgtct 240
tgtaaatggg ccttcccaga gagaggtgac tgtccagtgg caccggggcc ttttctcct 300
tcccctttta ctcttatcaa ctaggacaga aactaagaat tttggcttca agtgggctaaa 360
agactgatgg gggaaaaaag aaaatagaaa aaaataacag agagactgac gctctaggca 420
gttacaagtc caagaaaaaa gacagaaact ttttaagtatt gagccaaaac caggtctagc 480
aamcataatg ctggccctag attattttat aatttatgaa gaaacttcta gatatggggg 540
tgacaaaagg aaattaaatc cattatataat gcataatatt taatgtaaat atataataga 600
taaattatgt atacataata tataaccaaa ttgaaacagt tttacaattt ggtttgactg 660
gaaattcaaa atccatatat taatttttgt agtaaaagt tatgtaaaaa aaaaaaaaaa 720
gggcggcc 728

```

<210> 46

<211> 1635

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (85)..(85)

<223> n equals a,t,g, or c

<400> 46

```

tcgacccacg cgtccgcagc tctccgtgga caatgggctg tggcgtgtga ccctgtgcat 60
gctggccttc ccgctgtctc tcacnggcct catctcctc agggagaaga ggctgcagga 120
tgtgggcacc ccgcggggcc gcgcccgtgc cttcttcacc gcaccctggg tggctctcca 180
cctgaacatc ctctcctact tcgccttcct ctgcctgttc gcctacgtgc tcatgggtga 240
cttcacgcct gtgcctcctc ggtgcgagtg tgccatctac ctctggctct tctccttggt 300
gtgcgaggag atgcggcagc tcttctatga cctgacgag tgcgggctga tgaagaaggc 360
agccttgtag tcagtgact tctggaataa gctggacgtc ggcgcaatct tgctcttcgt 420
ggcaggggtg acctgcaggc tcatcccgcc gacgctgtac cccgggcggc tcatcctctc 480
tctggacttc atcctgttct gcctccggct catgcacatt tttaccatca gtaagacgt 540
ggggcccaag atcatcattg tgaagcggat gatgaaggac gtcttcttct tctcttctct 600
gctggctgtg tgggtgggtg ccttcggggg ggccaagcag gccatctca tccacaacga 660
gcgcggggtg gactggctgt tccgargggc cgtctaccac tctacctca ccattctcg 720
gcagatcccc ggctacatcg acggtgtgaa cttcaaccg gagcactgca gcccaatgg 780
caccgacccc tacaagccta agtgccccga agcgcagcg acgcagcaga ggccggcctt 840
ccctgagtggt ctgacgggtc tctactctg cctctacctg ctcttcacca acatctgct 900
gctcaacctc ctcatcgcca tgttcaacta caccttcagg cagggtgcagg agcacacgga 960

```

ccagatttgg	aagttccagc	gcatgacct	gatcgaggar	taccacggcc	gccccgcgc	1020
gccgcccccc	ttcatcctcc	tcagccacct	gcagctcttc	atcaagaggg	tggctctgaa	1080
gactccggcc	aagaggcaca	agcagctcaa	gaacaagctg	gagaagaacg	aggaggcggc	1140
cctgctatcc	tgggagatct	acctgaagga	gaactacctc	cagaaccgac	agttccagca	1200
aaagcagcgg	cccagagcaga	agatcgagga	catcagcaat	aagggtgacg	ccatggtgga	1260
cctgctggac	ctggaccac	tgaagaggtc	gggctccatg	gagcagaggt	tggcctccct	1320
ggaggagcag	gtggcccaga	cagcccagc	cctgcactgg	atcgtgagga	cgctgcgggc	1380
cagcggcttc	agctcggagg	cggacgtccc	cactctggcc	tcccagaagg	ccgcggagga	1440
gccggatgct	gagccgggag	gcaggaagaa	gacggaggag	ccgggcgaca	gctaccacgt	1500
gaatgcccg	cacctcctct	accccaactg	ccctgtcacg	cgcttccccg	tgcccaacga	1560
gaaggtgccc	tgggagacgg	agttcctgat	ctatgaccca	cccttttaca	cggcagagag	1620
gaaggacgcg	gccgc					1635

<210> 47

<211> 4893

<212> DNA

<213> Homo sapiens

<400> 47

ccacgcgtcc	gtgagaagat	aatcctgaga	ggctgcaccc	tgagaaatac	cagctggtgt	60
tttggaaatg	ttatttttgc	aggtcctgac	actaaactaa	tgcagaatag	tggtaagaca	120
aagtttaaaa	ggacaagcat	tgatagattg	atgaatactc	tagtactatg	gatttttggg	180
tttctgatat	gcttgggaat	tattcttgca	ataggaaatt	caatctggga	gagtcaaact	240
ggggaccaat	tcagaacttt	cctcttttgg	aatgaaggag	agaagagctc	tgtgttctcc	300
ggattcttaa	cattctgggtc	atatattatt	attctcaata	cagttgtacc	catttccctta	360
tatgtgagt	tggaaagtaat	tcgtctagga	cacagttatt	ttataaactg	ggaccggaag	420
atgtattatt	tcgaaaaagc	aatacctgca	gtggctcgaa	cgaccacgct	caatgaggaa	480
ctggggcaga	ttgagtacat	tttctccgac	aaaacgggta	ccctcactca	aaacatcatg	540
acctttaaaa	gatgttccat	taatgggaga	atctatgggt	aagtacatga	tgacctggat	600
cagaagacag	aaataactca	ggaaaaagag	cctgtggatt	tctcagtcac	atctcaagcg	660
gatagagaat	ttcagttcct	tgaccacaat	ctgatggaat	ccattaaaaat	gggtgatccc	720
aaagttcatg	aattccttag	gttacttgct	ctctgccaca	ctgtaatgtc	agaagagaat	780
agcgcaggag	agctgattta	ccaagttcag	tcacctgatg	aaggggctct	agtgactgcc	840
gctagaaatt	ttgggttcat	ttttaaatcc	cggacccacg	agaccataac	aatagaagaa	900
ttgggaacac	tagttactta	tcaattactt	gcctttttgg	atttcaacaa	caccagaaaa	960
aggatgtctg	tcatagttcg	aaaccagaa	ggacagataa	agcttttattc	caaaggagca	1020
gatactattc	tgtttgagaa	acttcacctc	tccaatgaag	tcctttttgtc	tttgacgtca	1080
gaccacctca	gtgaatttgc	aggggaaggc	cttcggacct	tggccatcgc	atacagagac	1140
ctggatgaca	agtacttta	agagtggcat	aagatgcttg	aagatgcgaa	tgttgccaca	1200
gaagagaggg	atgaacgaat	agctgggcta	tatgaagaaa	ttgaaagaga	tttgatgcta	1260
ctaggtgcca	ctgctgtaga	agataagtta	caggagggtg	ttattgaaac	agttacaagt	1320
ttatcactag	ccaatattaa	gatctgggtc	ctaacaggag	acaaacaaga	aactgccatc	1380
aacatcggtt	atgctcgcaa	catgctgact	gacgacatga	atgatgtgtt	tgtgatagca	1440
gggaataatg	ctgtggaagt	gagagaagaa	ctcaggaaaag	caaaacaaaa	tttgtttggga	1500
caaaacagaa	atttttccaa	tggccatgta	gtttgtgaaa	aaaagcagca	gctggagttg	1560
gattctattg	tagaagaaac	cataacagga	gattatgcct	taatcataaa	tggccacagt	1620
ttggctcatg	ccctagaaaag	tgatgtcaag	aatgatctcc	tagaacttgc	ttgcatgtgt	1680
aagactgtaa	tttgtctcag	ggtcactcca	ctccagaaaag	cccaagtggg	agagctgggtg	1740
aagaagtaca	gaaatgctgt	tactttggcc	attggtgatg	gagccaatga	tgtcagcatg	1800
attaaaagtg	ctcacattgg	tgttggcatc	agcggccagg	aaggattgca	agcagcttta	1860
gccagcgact	attcattttgc	acagttttaga	tatctccaaa	ggcttctcct	tgttcatgga	1920
aggtggtctt	atttccgaat	gtgcaaattc	ttatgctatt	tcttctataa	gaatttttga	1980
tttactcttg	tgcatttctg	gtttggtttc	ttctgctggt	tctcagccca	gactgtttat	2040
gaccagtggg	tcataccctt	ttttaacatt	gtttacacat	cactgcctgt	tttagccatg	2100
gggatttttg	accaggatgt	gagtgaccag	aacagcgtgg	actgtcccca	gctctacaaa	2160
ccaggacagc	tgaatctgct	ttttaacaag	cgtaaaat	tcattttgcg	gatgcatgga	2220
atctacacct	cattagtcc	tttcttcac	ccctatgggg	cctttttacaa	cggtggctgga	2280
gaagatgggc	aacataattgc	tgactaccag	tcctttgcag	ttaccatggc	cacatctttg	2340
gtcattgtgg	tcagtgtgca	gatagccttg	gataccagtt	actggacttt	cattaatcac	2400
gtcttcatct	gggggagcat	tgccatttat	ttctccattt	tattttacaat	gcacagtaat	2460
ggcatctttg	gcactctccc	aaaccagttt	ccatttgttg	gtaatgcacg	acattccctg	2520

accagaagt	gcactcggct	tgtaattctc	ttaacaacag	tggtttcagt	tatgccagt	2580
gtggcattca	gattttttgaa	ggtggattta	tacccaaccc	tgagtgatca	gatccgccgg	2640
tggcagaagg	ctcaaaagaa	ggcaaggcct	ccaagtagcc	gaaggcctcg	gacccgcagg	2700
tcaagctcaa	gaaggctctg	atatgctttt	gtccaccaag	aaggctatgg	agagcttatt	2760
acatctggaa	aaaatatgct	agctaaaaat	ccacccccaa	catcagggct	ggaaaagaca	2820
cattataata	gcactagctg	gattgaaaat	ttatgtaaga	aaaccacaga	caccgtgagc	2880
agcttttagcc	aggataaaac	agtgaactg	tgagtcaata	tgaattttaa	ccacgtagt	2940
atcttttcac	ttcaggtgga	gctgaaattc	tgctggctcc	agagtttgag	atgtgaggca	3000
agaggtgggg	caggcagatt	gcctcactta	acttaaatct	gcggcagaca	actgccagt	3060
cccataaac	aggagtgtgc	gctatggaaa	accaggccag	agggtcactg	tctggtttgt	3120
gatttggtgg	acaaaacact	cgctgttaca	agtacagatt	tttttttttt	ttaaatcaac	3180
ctagatacca	attgacctga	acttttaga	cttattttat	gagaaaaact	tgtaaagctg	3240
catattcaat	gaatggatcc	tcaggcggat	aaaagggtgc	attttaaagg	tatatatcca	3300
agctgaaaag	catgcctatt	gacagataaa	catgtatctg	taagatcagc	ctttcccaag	3360
gtatactttt	aaaattttaa	gcgtgtactg	tggtgctttc	agactgagtt	gcattgtcact	3420
ctttagtctt	gatattctacc	tgtctgttca	gccaggacaa	caaattggctt	ccaagcctga	3480
agaatacaaa	agtgtgcttg	tgtttctcat	ttttatacca	gtctagggac	aaaggagact	3540
gaacatcttt	gcagcaggat	aggctggtaa	tttgatcaaa	tttattcaaa	aaagctctcag	3600
tctgtgtcat	gtaaggacat	gcttatgaaa	tgtagagag	gctcgccact	aaagtattcta	3660
aatacttttc	aattggctttt	ctaacaacct	cagtagtaat	tgctgagaca	tcattccagac	3720
cattataaga	atcagcaaa	cactggaatt	tcacacttta	atgataatat	tccacatagt	3780
ctatgggcaa	atattttcaa	cattttccat	ttttaaagct	tcagaattga	agccaaacaa	3840
attaataaat	aattgtttta	attactattt	aaaaactcag	gtttagattg	tttaaaatta	3900
gttgcttttg	atactcagct	gtcatgttta	taattcaaac	atgtagtaaa	catatgtagg	3960
taaggttggt	tttttgagga	tggtgcagct	caaatttcag	tccacatatg	aatcatcagt	4020
gtattttcca	taaagtgatt	cgggcatatt	tggtgaaaa	cctcagttct	gtcacttctt	4080
acctctataa	acttgacga	taatgtgcct	tctctgagac	tcagtttctt	cctctgtaaa	4140
atgaggacat	actacctacc	tcacgtgggt	ggttgatgat	tgctctgtcaa	agcacaaact	4200
ctgaaattat	taaaaacata	attatttcat	aaacagatga	gttaagttcc	agttaactca	4260
acatcagtat	aacagagcaa	ttggaagaga	atatgaaaaa	actggaatct	aaatagtcag	4320
tgaggaaagg	tttgataaaa	tgaattggc	agaagatat	aaaactgggt	agggtcctac	4380
agggaaataa	aattataacc	gtggagggtac	atttctctac	cagaaagcaa	aaataaagca	4440
tcattgtcta	atggttttct	acaaatcaac	ttctaattct	acagagtcct	taactctggt	4500
cctattaaat	tcttggtcag	acaaagtta	atttcccaag	agagtcagg	gacacttgag	4560
tgagtttgat	ggataatgag	ctaattgtgat	atctataggt	cacaattttt	taaaaccaaa	4620
attttcaagt	ctgggataat	ctttcctaaa	tgggatcaaa	tgaataata	tggtgaaaag	4680
agtcaaatgc	agtcctttac	catagtaact	gcctatggac	gttgtctttc	ccttacatgc	4740
ctgcctacac	ttaaccagat	gttggttttc	aatgtctaat	ttgtcattag	tttcaccaca	4800
tttgctcact	ttttgttaaca	tttttgcaag	atttgaaaac	tttcagtaaa	tgttttggca	4860
ctattggtaa	aaaaaaaaaa	aaaaaaaaaa	aaa			4893

<210> 48

<211> 1655

<212> DNA

<213> Homo sapiens

<400> 48

ccacgcgtcc	gggcaaagaa	ttaaacctgg	tggttggtact	tcaacttagc	atggctagaa	60
ttggaagtac	agtaaaccatg	aacctcatgg	gatggctgta	ttctaagatt	gaagctttgt	120
taggttctgc	tggtcacaca	accctcggga	tcacacttat	gattgggggt	ataacgtgta	180
ttcttttact	aatctgtgcc	ttggctcttg	cctacttgga	tcagagagca	gagagaatcc	240
ttcataaaga	acaaggaaaa	acagggtgaag	ttattaaatt	aactgatgta	aaggacttct	300
ccttaccctt	gtggcttata	tttatcatct	gtgtctgcta	ttatgttgct	gtgttccctt	360
ttattggact	tggaaggtt	ttctttacag	agaaatttgg	attttcttcc	caggcagcaa	420
gtgcaattaa	cagtgttgta	tatgtcatat	cagctcccat	gtccccgggtg	tttgggtccc	480
tggttgataa	aacagggaag	aacatcatct	gggttctttg	cgcatagcag	ccactcttgt	540
gtccacatg	atgctggcct	ttacgatgtg	gaacccttgg	attgctatgt	gtcttctggg	600
actctctac	tcattgcttg	cctgtgcatt	gtggccaatg	gtggcatttg	tagttccttg	660
acatcagctg	ggaactgcat	atggcttcat	gcagtcatt	cagaatcttg	ggttgcccat	720
catttccatc	attgctggta	tgatactgga	ttctcggggg	tatttgtttt	tgggaagtgt	780
cttcattgcc	tgtgtttctt	tgtcactttt	atctgtgggtc	ttactctatt	ggtgaatcgt	840

gcccaggggtg	ggaacctaata	ttattctgca	agacaaagga	agaaataaaa	tttcccatat	900
tgaatgagaa	gttaaaatga	atgtgtcaga	gaatgggctt	aacacatcgt	tggtttgaaa	960
acttccattt	taaaaattta	gagtttagtc	attagaaaaa	ataatggact	ggaaagtatt	1020
atttatatcc	aaatatacct	atttcaaagt	gtatttgtga	ggcctgtttt	agcctgtgtc	1080
ttttgtattg	tgtgttgcta	aagaattcta	cttttagtag	gctaatacaac	aatgaaaggg	1140
ttagaaaatt	gctgtggaac	atccagggtga	acttcaggaa	agacagtga	aaatggaaaa	1200
cggtggagct	tctgttgaga	taatcttcat	taggtatata	tcttagggat	acagcctttt	1260
ctttatctta	tagcaggaaa	aaaaactttt	tgagggaaat	agaagggctg	cgttacacaa	1320
aataaacaat	ggcattgtca	taggccttcc	ttttactagt	agggcataat	gctagggaat	1380
atgtgaagat	gtttttttga	agtctctttc	tgatcacgaa	caatagcttg	cgctctactc	1440
tgtagtattg	tggattgccg	agcaatgacc	cttttcaatt	tcttatttct	gtgttactga	1500
ggaccctaata	cacttaggga	tgtaatttta	tagtataaac	tttctgtaca	gtttttctta	1560
tagtctaata	agtaaaaagt	gtccttcaaa	ttatgataat	tgctatgta	catggataaa	1620
ttaaaacact	gcacacggaa	aaaaaaaaaa	aaaaa			1655

<210> 49

<211> 6297

<212> DNA

<213> Homo sapiens

<400> 49

ccacgcgtcc	ggtcagcttt	catctcgtcc	tatctttggt	caggcaaact	tctctagttc	60
tgttttaata	ggcatatttg	ttaggtctgt	tttttgaaat	cctctttttt	acattgttta	120
aagataatgc	cttggctaaa	aagcctgctt	cacttttccc	tgtttttagt	tgttttctcc	180
acattggcag	taaagagcct	tggcgtccca	gtagcagcag	gttctccttt	ttgtattgtg	240
gactgttttg	atttcatact	gttggaaga	gtggctttga	tcatacatgt	tgttggtata	300
tttgcttttt	tgtctggggg	gtgagaagaa	ccagagatga	gcagagggtac	acccagtaga	360
cttcccagcc	tgcagagcct	cccgggaaga	gcttccgtgt	tcagggtgctt	ggggccccac	420
cctaggagcc	tgactcacag	tcagagcagg	gtcccggctt	gtgttcagga	ttttgaaaca	480
tttgtaagggt	gattttgttg	tttctacacc	tttctcctca	tctttttttt	tttgtagtta	540
atcgttacta	ataacagaaa	agacattttt	ggcatggtaa	ttggcacaaa	gtgaataatt	600
gttgaataga	tgacttttga	ggctttcaaa	attcgagtgt	ccataaaatc	catccagagc	660
cacctgggtc	atttttttga	accacttaac	gtaattctgg	aaaaccttga	ctgtgggtct	720
taagtttggg	ggattgctgc	ttctcactgg	ctgacctttg	gaggtcgcct	atttcaggat	780
gtgattccac	ttaggtctca	tttcacctga	cactgcaatt	ctgtgccttc	agagggattt	840
gttattgcga	atgatgtgga	caacaagcgc	tgctacctgc	tcgtccatca	agccaagagg	900
ctgagcagcc	cctgcatcat	ggtggtcaac	catgatgect	ccagcatacc	cagggtccag	960
atagatgtgg	acggcaggaa	agagatcctc	ttctatgata	gaattttatg	tgatgtccct	1020
tgcagtggag	acggcactat	gagaaaaaac	attgatgttt	ggaaaaagtg	gaccacctta	1080
aatagcttgc	agctacatgg	cttacagctg	cggattgcaa	cacgcggggc	tgaacagctg	1140
gctgaagggt	gaaggatggt	gtattccacg	tgttcaacta	accctattga	ggatgaagca	1200
gtcatagcat	ctttactgga	aaaaagtga	ggtgcttttg	agcttgctga	tgtgtcta	1260
gaactgccag	ggctgaagtg	gatgcctgga	atcacacagt	ggaaggtaac	ctttcctcga	1320
gaactttcat	tctaaagagt	aggtgcagca	tcactgaagt	agagtcaagt	ttcaaagcat	1380
tcacgtgtga	gtaacttgaa	taaatactac	atctggttat	gccaattaga	atcaatttcg	1440
gagtgttatt	tcatgacaca	tttcatgaca	agtggcatgt	ttattcctgg	cagtggaaaa	1500
gttttttttt	ctccacgtac	agaaataaac	tcttttactc	tcattccctgt	aagggttagct	1560
ttgctttttt	tttttttttt	taaattgggc	cgggattcaa	gccttggttc	caatatgaag	1620
taattcatta	caatttttagg	ccagaaacag	cctgaggctt	gtttaaaaag	aaaaaaacta	1680
gatggaaaaat	gttattttat	aatgcttgct	ctggttttta	gaataaatgt	atttcatctt	1740
tgtttttaac	agaatttatg	tatttaataat	ttggggattt	tctgtaaaga	ttgttttgtt	1800
ttgtcttggc	aaataatctt	cctatctttg	gagtgaatga	gaatcaccat	ttgtcacctt	1860
tgagagaatg	gatactcctg	ccctgtgatt	ttgttggtga	ttggatagtg	ctagtaatct	1920
ggaatgtacc	ctgtggttct	gcaggtaatg	acgaaagatg	ggcagtgggt	tacagactgg	1980
gacgctgttc	ctcacagcag	acacaccag	atccgacctt	ccatgttccc	tccgaaggac	2040
ccagaaaagc	tgcaggccat	gcacctggag	cgatgcctta	ggatattacc	ccatcatcag	2100
aatactggag	ggttttttgt	ggcagtattg	gtgaaaaaat	cttcaatgcc	gtggaataaa	2160
cgtcagccaa	aggtgagttt	ttctttttcc	aaatgacat	aacatttgat	cttgatcatt	2220
taagacaaaa	actaacggga	gtttagtaga	agtacagagg	aaagaggagc	ttcttgctgt	2280
gggcagcagg	agagctgacc	ctgaatgagg	gggaatttca	tttaaatatc	aagttttcca	2340
aaaagcagaa	atttctcata	ggtgataggt	aagtggagaa	gtcagtgttt	gggggaatgt	2400

attcctgcc	cactgtaaat	ccagttat	ataaaaaatt	gaaaagacat	gaaagattgc	2460
tctgtggctc	tcaattggaa	gccccaggtt	tctgtgctct	agttccttgt	gagtggttca	2520
tttcaccaat	tacagatagc	agagctctgc	tgaccccaag	ccagcccggg	ttcaccttgg	2580
ctgcaaggaa	tgatgacggc	cttgtccaga	cctgggctaga	aagatgcagc	ccggcctgtt	2640
tgctatggat	ctaaactgcc	tgctggttcc	tttccaaggc	aggccaggaa	acagtgggtga	2700
aggagtgttg	ccctcatcct	aacacgcagt	cctttgtaat	gcgtgctgtc	tcacctgtat	2760
cacgccagca	ttattttatta	gttcataaat	cagccttcca	tgatgaaaga	acctggcctg	2820
gaatcaaagt	ctggaagtct	gtattttctt	aagatccatg	cttgaaaatt	aggacaaaaa	2880
acgcttagct	ttggaggaa	aaaaaggaaa	cagttccgca	aagagctcca	gcctttttct	2940
ggggcacggt	ttgtgcagtt	taacgttggg	acgtacagcc	tcagacgggc	aaagggggcg	3000
actgcacttc	tgccgccacc	agggtttttc	tgtcagggtta	gaaagtattt	cactttgagg	3060
ctaaaagtct	cacaagggtat	cttaacgctg	atggaatgtt	attttcatgg	aatcagtata	3120
agaaattata	ttgtaaagta	ttagataact	tgcatgtatt	catactaggt	ttcagttagc	3180
tgtgttttag	actttgcgct	tgtcacattt	taagtgggtca	gtgaccacag	gcttgtggct	3240
gcccagctgc	agagcacagt	gcagtcacag	aggagcctgt	cttagagacg	cgtgcttttag	3300
gttggcctgc	attagggcct	acattgatgt	ttctgacgtg	ttaatactta	catagaaagg	3360
ttttgacatt	ttttcaatta	gccccctatg	tatagtctta	cttttttagaa	caactttattg	3420
tcattttctc	gtttaaataa	tatgaatact	tctctctttc	tgttactatg	tcagtttctt	3480
attcacttag	ttcaacagat	ctagtgcctag	catggcctgt	gctgctgttg	gtcctactgg	3540
gaacgcagggt	agactctcca	tggtcaggat	gcgtgtttct	gttgtgggtg	tgaggcctgt	3600
aagcacttgg	ctagaagtta	ggccagggaa	gctcacactg	accttgggtat	ttgaaggtcc	3660
cagaatgagg	ttgttgagggt	agaacagaga	tgaggagaaca	tgcccttgga	gctggactca	3720
acaagaaggc	ccctctgggg	gaagctgagg	ttggacagga	agggcggtgtg	ccctcactga	3780
cttgtctaca	ggcttgggggt	tcactctgtt	tgggtttttg	ttttttacat	tatattaaca	3840
tggaataaaa	agggtgtccc	tgggatgctc	ccggcttctc	tgctcagtag	ctttgtggct	3900
ctgagtaaaa	tgaacttgcc	tgtgttgaaa	tatcctaatt	tttaaactta	cttcataagg	3960
actgagggaat	tacgactttt	atcaattttg	tgacctgtta	aaatgttaaa	aaggacatgt	4020
atttttttaa	gatctttaag	taaaacattt	tgctcattcc	caaagccaaa	tttaaattat	4080
accatggccc	taattcagaa	gttcattctt	tggcagggtg	ttccttgggtg	cctggggcac	4140
tctctctttc	tcccagttcc	tgtggcagtt	tgccagggtg	ccaagaaca	attcataccc	4200
tcctttctcg	ttatttatat	acttgtcttt	ttgcccctgc	cgggtatttt	agaaatcgtg	4260
cttgggtgac	tttgtgtcct	tcagtgtgcc	ttaccagag	cagatgcacg	ataagcattt	4320
ttacacgaga	acaagctgggt	ggtgtaggcc	tctgctaagg	aacaggctgt	atatgctctt	4380
tgtgggatta	aggtagaatc	agctttaact	ccaaagaaac	tgtccatgaa	ttttgtttat	4440
aatagcaagt	agatttaaaa	tgacactttg	aaaaaattct	gttgtctttc	tctacatata	4500
atgctgtaga	aaaatataac	tgatggattt	tgtgaacgtg	gtatttttaa	cttttcgtag	4560
cagcacaaaag	aatgtccttc	tttgtgtgtc	aatgaaattg	ttctttatga	cagcttcagg	4620
gtaaatctgc	agagaccaga	gaaagcacac	agctgagccc	tgcatgctc	acagaaggga	4680
aaccacaga	tcctcttaag	ctggaaagtc	cgctattcac	aggaactgggt	gacacagaaa	4740
tagctcatgc	aactgaggat	ttagagaata	atggcagtaa	gaaagatggc	gtgtgtgggt	4800
aagaaaagtg	gttatgtctt	gatctaatac	gctggtgtct	tcacagtcct	tttggattaa	4860
atgggatccc	agagccactt	cttggtcgggt	ttgagggggc	agtacatgtg	tggtatcagg	4920
cacatgcagt	gtgagggtcg	gactctgtgg	aagccggaag	gtttcaacat	ctgccgcaaa	4980
ccgttccatg	ttgcacagaa	ctgacagaaa	ggaagaatgt	gcttttggtta	ttgaagggtta	5040
ccacacatta	cagattgatt	tgtctcatcc	tgattccctt	tttagtcttc	ctccatcaaa	5100
gaaaatgaag	ttattttggat	ttaaagaaga	tccatttgta	tttattcctg	aagatgaccc	5160
attattttcca	cctattgagt	aaggattcag	cctttttaat	tattcattta	aagaaattta	5220
ctatagagta	tcaaatgtac	aactgatcac	atgtaaccat	tgttttgtat	gtagttctgt	5280
ctagcttttt	tttttttttt	aaccttttta	actgcatatt	agagcaggat	gaaacttttag	5340
aggttactca	atcttttaaat	ttaaggagaa	agtaaacttt	tactttgtga	acatgataga	5400
taaaaaaaaa	ctggaccggg	cgcgggtggct	cacggctgta	atcccagcac	tttgggaggc	5460
cgagcggggc	ggagcacgag	gtcaggagat	tgagaccatc	ctggctgaca	cgggtgaaacc	5520
ccgtctctac	taaaaataca	aaaaaaatta	cgcgggcgtg	gtggcgggca	cctgtagtcc	5580
cagctactct	ggaggctgag	gcaggagaat	ggcgtgaacc	tgaggagggtg	agcttgcagt	5640
gagccgagat	cgcgcgcgtg	cactccagcc	tgggcgacag	agcgagactc	cgtctcaaaa	5700
aaaacaaaaag	aaaactggac	tgtgattatg	aatctaaatt	agttgtgatc	ctgaacctaa	5760
attactcaat	tgagtatata	gacgagtagc	caaggttgtc	tagttcagtt	tctgtagaag	5820
aaatgaagag	cagcatgggt	gagggcta	tagggatgac	atagacagaa	tatagaggaa	5880
aagggttttag	gacaagtctg	acattcatct	gtttcttatt	cattgaaatt	tagaatctat	5940
ttaccagggc	ggtcacttac	tgtctttttt	aataactgggt	cctttgcata	catttgtaaa	6000
agtctattaa	aaaataagtc	tcagccgggc	acatcccagc	acttggggag	gctgaggcag	6060

gcagatcatg	agggttaggag	tttgagacca	gtctgaccaa	tgtggtgaaa	ccccgtcttt	6120
actaaaaata	caaaaaaaaa	ttaggtgtgg	tggtgtgcac	ctataatcac	agctgtcag	6180
gctgagcgag	gagaaccgct	tcaacccggg	aggcagaggt	tgagtgagc	tgagactgag	6240
ccactgcact	ccagcttgga	agacagagca	agactccata	tcaaaaaaaaa	aaaaaaa	6297

<210> 50

<211> 3408

<212> DNA

<213> Homo sapiens

<400> 50

ccacgcgtcc	ggaggcagga	ccttgctcta	ttcattaatc	ttgccccca	acagttat	60
tcagaggggc	aagaagtgtt	tcaggggtct	tggtccctgt	ttgaccagtc	gtcctaacc	120
tcattgtctt	ggctattgtt	gttataatct	gggtttacct	tttggaaggt	catggggat	180
ccttttggca	aagtattggg	ccctctcctt	ggaaactgca	cacacaccc	gcagcttaca	240
attcagggag	ttcacagggt	tacagaatcc	tggaactctt	catgtccggt	tctactcatt	300
gtagcttcag	tggaaccttc	tagcagtcct	ttccagctcc	ttccagctcc	ctcagctctg	360
cttccctccg	cccatcaagc	cctcctcagc	ccataagggt	ggccaggtgg	cctgtgggga	420
taaatcagag	tgcccacaag	tgccaggggc	caaagacatc	ccagagcaaa	cccaagaatc	480
cctctacaag	ccccagccca	ctcagaagga	tgcatcttgc	ccccctctgt	tatttgtttg	540
tttttaatta	tgaagttagg	gcatgggtcat	gtttgagaat	gtgagaaatg	cagagaaggt	600
aaaatgatgc	tttttgttta	gggcgctgct	gcttctggct	taagatccta	aatcaagca	660
gctgccagat	ctggacctaa	gacttgcttc	ccatcacctt	acataaaaga	aagagcactg	720
gactaggaat	caaagatctg	aattcccatc	aaatctctgc	tattactagc	ttttatctct	780
atatttttat	ttatctgtct	atctatctag	taccttttgt	gaatatgagt	gtttctcacc	840
gaggccctcc	catctctctt	gcccccgatc	ctggaatgga	ccaaatacct	tgtttactga	900
aggatacaga	tgccatgtga	ctgttgagaa	tcactcaccc	tccttagagcc	atgggttctt	960
cttctataaa	ataggatgtt	tcgtgcctat	ttgctaatac	tgagtgacaa	tgacataagg	1020
tacataaagc	tgtatgcatt	gatgcaaaac	taacatcata	tttgtagggg	tggttgctaat	1080
aatactatcc	atcagcaag	cagtcattca	tttactcagt	caaatactga	tgacttggtg	1140
cattcagttt	cctcttttgt	aaaatgggga	taaaaatagg	acttagctca	taggggtatt	1200
aagattcagt	gagttaatat	atataaaaat	cttagagcag	tccttggaac	atattaagaa	1260
ctcaatacat	attagctagt	tgagcaggct	gtagtatttg	ttccagccaa	gaaaagactg	1320
ttctctaaca	gcacaggaaa	taaagatggg	gttaggcacg	acacggcagc	aggacttacc	1380
ttctgtctaa	ttcagctggc	agtcaaaaga	agaattatta	gaagcctatg	agcttggctt	1440
cccaaagatc	tactgagtac	agggggatat	ttaaagaata	aaaatcccta	gaccacttta	1500
cagtacagga	gagacaagaa	gctgttcaca	caataacaag	tgctaaattc	cttgattttt	1560
atactgacag	ctgaagtgtt	agagaagaga	aggatcaata	aagaccggaa	tattaaagca	1620
gacaggccta	aaagaggatt	ttagatttga	taaagaattc	ctccagttct	cagagcaggg	1680
actttggagg	gtaaccaact	ggatttcagt	ccttgccctg	cacttactga	ttgtatgacc	1740
ttggaaaagt	tacttcaact	ctgtgagcaa	tgattctctc	atctggaaaa	caaaacaaaa	1800
caaaaaaact	aacaagggtg	ataataatac	ctacctccct	acctcatagg	gctgatgaga	1860
agattaaaaa	gtacctacat	aaagcccttc	tctgcgtgcc	tgagagcatg	caagggctcc	1920
atgtgaacca	ctattttttt	tttttttttt	aatgaaaagt	catgggcagc	accaaagctc	1980
agaatttttg	cagtaaggaa	ttatgattct	acattgaaat	ttgccagaag	gggagctgac	2040
tgccctcatg	gacatttttg	aatgaggcca	aaaaaggaaa	caagtgtatc	ctgggatttt	2100
acgagatgct	aggtatgtcc	ttagcactta	atcctcatga	ctaccctatg	atgtaagtac	2160
tatctgttgt	ccctatttta	cagttggcca	aggtcacata	gctgaaacgg	acttctgtgt	2220
gtcttctaac	ttttgctttc	aggtctggaa	aaatgcaatg	taaacctaga	ccctctttga	2280
aatactgaag	atggtaatct	tatcccttcc	tcactttctg	ttttctaaaa	taacagtcct	2340
tggttccttac	aatgtctgtt	ttccagattc	ttagaagact	ttttgcttat	tttccataac	2400
tctttacttg	tgatccctga	atgacaccgg	gggtatagca	gagaatgtcc	atttctctca	2460
agttcaaaag	tcctacaaaa	aatagttgct	agcctggcat	gatgggtgtg	gcctgtggcc	2520
tcagctacct	gggaggctga	ggcaggagga	ttgcttgagc	tgaggagtgt	gagggcgagc	2580
gtgatcgagg	ctcacgcagc	cctccggggc	tcaagcattc	ctctcgccct	agcctcctga	2640
gtagctggga	ccacagctcc	actaattttg	aagttttttt	ggtagacatg	aagtctccct	2700
gtgttgcccg	ggctggtctc	aaactcctga	cctcaagcag	tcctcctgtc	ttggcctctg	2760
gaaatgctgg	gattacaggc	gtgagccact	gtgctggcct	cttttttctt	tttctttttt	2820
tttaaggttt	ttatttggtt	aatgggaagt	ctgtgccatc	aactgagcat	tgatatttct	2880
ccttagtaag	agcctgggtg	ggccactggg	agagaactat	acattaaatg	taagtagcct	2940
ctgggtagag	agcccctggc	tggtttcctt	tcctttctct	ccttttctct	actttgggtg	3000

ctggaggcat	ttcccagact	ccagttttctt	accaccctca	cggatttttgc	tattgtatta	3060
tcacctcctt	tatcattccc	aaaattgact	ttatggagac	tcattaaaag	aaagaatcat	3120
cggccgggag	cgtgggtca	cgccacgaag	gcgggcgaat	cacctgaggt	gcggagttcg	3180
tgaccagcct	gacaaaaaca	gagaaacccc	atctctacta	aacaatacaa	aattagctgg	3240
gcgtgggtgt	gcacgcctgt	aatcccagct	actggggagg	ctggggacggg	agaatcactt	3300
gaacccggga	ggcagaggtt	gcagtgacca	aagatcgcac	tattgcactc	cagcctgggc	3360
aacaagagca	aaactctatc	tcaaaaaaaa	aaaaaaaaaa	aaaaaaaaa		3408

<210> 51

<211> 1663

<212> DNA

<213> Homo sapiens

<400> 51

tcgacccacg	cgtccgggca	gtggggtgag	ggcacacaag	cagttcaggg	tcccagcagg	60
aagtggggct	gcagggccgg	ggtgggtcct	gggcctggcc	atcaggcagc	ctagcagggt	120
gttctgggca	tggagggggc	ctggtgtggc	tgagggcag	cccaggggctc	cctggaggat	180
cccgctctgt	gccctgcccc	cctgtgcct	ggggagccct	ctgccctcac	agccccacca	240
ccccattttc	tatgaccaca	gagctccgac	ctggaagatg	gctcaccag	gaggctccag	300
gagctctcac	tccccagga	cctggaggac	acccagctct	cagacaaagg	ctgccttgcc	360
ggcgggggga	gccccaaaca	gccctttgca	gctctgcacc	aggagcaggt	tttgcggaac	420
ccccatgtaa	ggcttccccg	gggtggggtc	ctcccagccg	tgggcctcag	ggtgaccgat	480
cacagggaga	gtggctccct	gccctgggca	ccccctgcgg	tggccccgac	gacagctgag	540
gagtaccac	aaggtctctg	cccacagtgc	tcgggggtgcg	gtgtctgggc	tgcggaagtgg	600
atccccctcc	tttcttgggc	actgcagcag	cttggggggc	tttttgagc	tggatgtgcc	660
tggtcctggt	ttcccagggg	cctttacagt	ggatgaggag	gtgaacacag	gagtcttgag	720
agcaagcacc	acctcgggct	ttgtttaga	aacaatggcc	cggacccag	gccggagccg	780
tggcttggcc	tcctgggtgt	gtcttggcat	ctgaaatgca	ggctacccac	accggctcac	840
ctccaggggt	acaggcaggt	cccacaggga	gagcttggcg	ctgagctgag	gctgtctggg	900
ctcctcgctt	cccaaccagt	ctgcagttac	aggggccagt	ggggggcggg	tgagaaggac	960
gggttccctc	aggggagccg	gccggagccc	gagccttccc	ccttctccag	gacgcaggcc	1020
tgagcagcgg	ggagccgccc	gagaaggagc	ggcggcgcc	caaagagagt	tttgagaact	1080
accgcaggaa	gcgcgccctc	aggaagatgc	agaaaggatg	gcggcagggg	gaggaggacc	1140
gggagaacac	cacgggcagc	gacaacaccg	acactgaggg	ctcctagccg	cagcagcgca	1200
ggccccgacc	agggcacacc	caccggcccc	gcctcctgcc	acccgggggt	gccgacgccc	1260
tggggcgag	acttccccga	gccgtcgctg	acttggcctg	gaacgaggaa	tctggtgccc	1320
tgaaggccc	agcgggactg	cggggcattg	ggggcgtttg	ttaagcggca	ctcatthttg	1380
ggaggccatg	gggtgtctca	ccacccccat	gcacacgcca	tctgtgtaac	ttcaggatct	1440
gttctgtttc	accatgtaac	acacaatata	tgcattgcatt	gtattagtgt	tagaaaacac	1500
agctgcgtaa	ataaacagca	cgggtgaccc	gcaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	1560
aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	1620
aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaa		1663

<210> 52

<211> 2343

<212> DNA

<213> Homo sapiens

<400> 52

agtcaggact	cccaggacag	agagtgcaca	aactaccag	cacagcccc	tccgccccct	60
ctggaggctg	aagagggatt	ccagcccctg	ccaccacag	acacgggctg	actgggggtg	120
ctgccccctt	tggggggggg	cagcacaggg	cctcaggcct	gggtgccacc	tggcacctag	180
aagatgcctg	tgccctgggt	cttgcgtgcc	ttggcactgg	gccgaagccc	agtggctcct	240
tctctggaga	ggcttgtggg	gcctcaggac	gctacccact	gctctccggg	cctctcctgc	300
cgcctctggg	acagtgcac	actctgcctg	cctggggaca	tcgtgcctgc	tccgggcccc	360
gtgctggcgc	ctacgcacct	gcagacagag	ctggtgctga	ggtgccagaa	ggagaccgac	420
tgtgacctct	gtctgcgtgt	ggctgtccac	ttggccgtgc	atgggactg	ggaagagcct	480
gaagatgagg	aaaagtttgg	aggagcagct	gacttagggg	tggaggagcc	taggaatgcc	540
tctctccagg	cccaagtcgt	gctctccttc	caggcctacc	ctactgcccc	ctgcgtcctg	600
ctggagggtc	aagtgcctgc	tgccttctgt	cagtttggtc	agtctgtggg	ctctgtggta	660
tatgactgct	tcgaggctgc	cctaggaggt	gaggtagcaa	tctggtccta	tactcagccc	720

aggtacgaga	aggaactcaa	ccacacacag	cagctgcctg	actgcagggg	gctcgaagtc	780
tggaacagca	ccccgagctg	ctgggcccctg	ccctgggtca	acgtgtcagc	agatggtgac	840
aacgtgcact	tcggcctctc	cctgtacttg	aatcaggtcc	agggccccc	aaaaccccgg	900
tggcacaaaa	acctgactgg	accgcagatc	attacctga	accacacaga	cctggttccc	960
tgctctgtga	ttcaggtgtg	gcctctggaa	cctgactccg	ttaggacgaa	catctgcccc	1020
ttcagggagg	acccccgcgc	acaccagaac	ctctggcaag	ccgcccgaact	gcgactgctg	1080
accctgcaga	gctggctgct	ggacgcaccg	tgctcgctgc	ccgcagaagc	ggcactgtgc	1140
tggcgggctc	cgggtgggga	cccctgccag	ccactggtcc	caccgcttcc	ctggggagaac	1200
gtcactgtgg	acaaggttct	cgagttccca	ttgctgaaag	gccaccctaa	cctctgtgtt	1260
caggtgaaca	gctcggagaa	gctgcagctg	caggagtgtc	tgtgggctga	ctccctgggg	1320
cctctcaaag	acgatgtgct	actggtggag	acacgaggcc	cccaggacaa	cagatccctc	1380
tgtgccttgg	aacccagtg	ctgtacttca	ctaccagca	aagcctccac	gagggcagct	1440
cgccctggag	agtacttact	acaagacctg	cagtcaggcc	agtgtctgca	gctatgggac	1500
gatgacttgg	gagcgctatg	ggcctgcccc	atggacaaat	acatccacaa	gcgctggggc	1560
ctcgtgtggc	tggcctgcct	actctttgcc	gctgcgcttt	ccctcatcct	ccttctcaaa	1620
aaggatcacg	cgaagggtg	gctgaggctc	ttgaaacagg	acgtccgctc	gggggaggcc	1680
gccagggggc	gcgcggctct	gctcctctac	tcagccgatg	actcgggttt	cgagcgctg	1740
gtgggcgccc	tggcgctggc	cctgtgccc	ctgccgctgc	gcgtggccgt	agacctgtgg	1800
agccgtcgtg	aactgagcgc	gcagggggcc	gtggcttgg	ttcacgcgca	gcggcgccag	1860
accctgcagg	agggcgccgt	ggtggtcttg	ctcttctctc	ccggtgcggt	ggcgctgtgc	1920
agcgagtggc	tacaggatgg	ggtgtccggg	cccggggcgc	acggcccgca	cgacgccttc	1980
cgcgccctgc	tcagctgcgt	gctgcccgc	ttcttgccag	gccggggccc	cgccagctac	2040
gtgggggccc	gcttcgacag	gctgctccac	ccggacgccc	taccgcgcc	tttccgcacc	2100
gtgcccgtct	tcacactgcc	ctcccaactg	ccagacttcc	tggggggccc	gcagcagcct	2160
cgcgccccgc	gttccggggc	gctccaagag	agagcggagc	aagtgtcccg	ggcccttcag	2220
ccagccctgg	atagctactt	ccatcccccg	gggactcccg	cgccgggacg	cggggtggga	2280
ccagggggcg	gacctggggc	gggggacggg	acttaaataa	aggcagacgc	tgtttttcta	2340
ccc						2343

<210> 53

<211> 3091

<212> DNA

<213> Homo sapiens

<400> 53

aaaccggaaa	gtttgtagga	aaattgctgc	acatggcctt	tgcagaaaag	agagccttca	60
aaacctctta	cattccagta	gaaaactctc	tctgcaagtc	cttaactttg	ttcactcatt	120
ccaggaaggt	gcttcaatat	tggatattca	cacagagccc	agtttttcaa	gtttgctttc	180
acagtcacgc	tatgctgaca	tgggtgttcc	acttcttgca	aaaaacttaa	tatttaaaga	240
tgggtgtctta	tcagaakgga	gtggacggtc	accttctca	cttcttattg	ctaactctca	300
tttgcaataa	tttggttaca	ccatttggtg	ctcacacttt	ctgccttttt	tctttcttaa	360
cgttagcttt	atagtgtcag	ccactaaaaa	gcactcctgc	gctgcagtcg	aattcttgc	420
taactaatat	taaaagttgg	ggaacatatt	catgttttct	gaagttttgc	tcattattgc	480
acatcttatt	gcgacaaagt	gcttttttagc	agccagcact	gtatttttta	ccttgagaca	540
atctgcattt	cttttataaa	actaagtata	tacttttatag	gctttatgat	gactgttatg	600
tttataagca	gtcactatga	aaattgcaat	ggtaatttta	tatgttagtt	tatcaaact	660
aaatcttggt	taattttata	ttttgttacc	tatactttgg	gggatcaagg	gaagagatgg	720
aactcttctc	ctgaaaaggc	ttcttggtag	ttaaagtagt	aaaactataa	aacaataaac	780
atccagttat	gagagatgat	atgatagggc	attatgaatt	cctatgggtg	tctgtaaatt	840
atgtatgtca	gttgacatt	gtagaaggta	tgtaaatcag	catagttgtg	tataacttaa	900
ccttgattta	taaggctcta	agattatgac	tattcattga	catctcatga	gaagctttag	960
aagactttct	atttttaaac	accattttata	tgtggacttc	tgtgtgctac	gactttgggc	1020
tttatatttt	catagagtct	ttatggaaaa	aatagaattt	attttccact	cctgtagcta	1080
tagctgctgc	acactttcac	cctgatttat	ttttttgttt	cttagctttg	atgttttcaa	1140
accaaggatt	gtgatttttag	gttagaatta	catattagaa	gcattaagac	tatgtctttg	1200
gatcagaatg	ctttagtgat	aaacctactt	tgaagacata	ctcttaagca	atctggatct	1260
taaatttatg	tgaatacttt	tttagaaaat	gataaagaaa	aatggaatta	cttcaaagtg	1320
tttcttgagt	cattgattct	tttagcatct	caaagtgtta	ttagaataat	tgggaatcact	1380
ttttagactt	ttcaagttac	cttccctggg	aagtttgtgc	agtgttatag	tttagtttag	1440
ctcctcttac	agggtaatgg	tttgctagtt	taaaactgta	accaaacgaa	ctggctcagac	1500
aacatatatc	taaaacactt	aaaatgttag	gaagtttggg	aatgtttata	cctaaacgtt	1560

tttgcgtgga	acttttttgtt	atztatagat	atttgtgtat	ttaacatata	tacttcagga	1620
aatatatgcc	tttccataaaa	cttaaccatg	cattcaatac	catggccctat	ctatagaatt	1680
gaatatttttg	gaccatgtta	tctgtggcac	agtcagtgct	gtgtttgagg	taaatagcagt	1740
aacgggttagt	tttctactttt	gtcttataga	aggtagaaac	catgtgtatg	ttatgtttgt	1800
ctataaaaaga	aaaaatacta	atattaaata	atttcttacg	actctgagtc	actcacttat	1860
ttttccaata	attgatattg	tacattccta	gtgccattag	gtatgtatgt	atgtaacttt	1920
tacagttttt	cagctgaaaag	ttgtaagtat	tttttttttt	tgatcggggc	tctttaatct	1980
catttttaatt	tccttttgttt	gaactgtagt	tattttattcc	tatattaacc	atctaaacca	2040
actgtaatga	catgtacact	aatacagaat	tgaacatttg	tagttgttgg	cagtgaaccc	2100
agtgtgttgg	gaattttaaag	cttaaaaatat	gggaatgatt	tgctgctata	tttcccttga	2160
gagagaaaagg	aggaagaaat	agaacctaat	agtgatcatg	aatttttaggg	aaagtaccga	2220
agaacccatgg	ggctcccctct	ggtttcttgt	gttgaatgag	gcaagggtaa	tcacttgatt	2280
ccgagatgaa	gacctctggg	cctcttaagg	agggagagtg	cattttttaga	gcttttagca	2340
aaatgtgaaa	agctgatgtt	tgccgcttgc	tttgtgaatt	tggttttgtt	ttacttatac	2400
attaactcat	gtaatctctt	aaatcttaca	agcattgatc	cattttcaaca	aaaaggtaaa	2460
tttaaaatgc	agacttttgtt	atttgccaaa	gaagattcat	gaaaaattta	cgtccaatta	2520
ttttgc aaat	agttaatttc	atttggcttt	ttaccatgtt	ccttcctttc	tttttcccg	2580
ttccttaatg	taattttaaac	cctggcaaac	attcctttaga	aaccaagagg	aaagaaagaa	2640
caaatatcaa	aaaagacata	gaatttaata	ttgatacaat	ttcacctcta	aaatggattt	2700
gaagaaatgc	aacctttatat	caaaaaatgt	catctgattt	cctttgtttc	tttttttaaat	2760
tatgtaatca	gatgatttta	tggttttttt	tcagggggagc	ggaatattgg	tttcttttac	2820
ttgtgtgttt	cagttttctc	tgccattcat	gtttcttttt	tgtgttcagt	gtttcaaata	2880
caatttgtat	ttaaggattt	taaaaatacca	aactgttaact	gagtacagtg	gatcgttttc	2940
tgtaggatg	ttaatatatt	acaatgaaat	ctataaagtg	ttgtcaattt	gattattgac	3000
acataataaca	tgtttacaaa	taaactgtgg	tattgatcaa	gttactatga	aaaaaaaaaa	3060
aaaccgggg	ggggcccg	aacccaatcc	c			3091

<210> 54

<211> 1748

<212> DNA

<213> Homo sapiens

<400> 54

agacgttccc	tcgcgccct	ggcacctcca	accccagata	tgctgtgtgt	gctgtgtgtg	60
cccctgtctt	gggggagga	gaggggtgaa	ggacagaaga	gtaaccggaa	ggattactcg	120
ctgacgatgc	agagtccgt	gaccgtgcaa	gagggcatgt	gtgtccatgt	gcgctgtctc	180
ttctctacc	cagtggacag	ccagactgac	tctgacccag	ttcatggcta	ctgggtccgg	240
gcaggaatg	atataagctg	gaaggctcca	gtggccacaa	acaacccagc	ttgggcagtg	300
caggaggaaa	ctcgggaccg	attccacctc	cctggggacc	cacagaccaa	aaattgcacc	360
ctgagcatca	gcatgcccag	aatgagtgt	gcggggagat	acttctttcg	tatggagaaa	420
ggaaatataa	aatggaatta	taaatatgac	cagctctctg	tgaacgtgac	agccttgacc	480
cacaggccca	acatccttat	ccccggtacc	ctggagtctg	gctgtctcca	gaatctgacc	540
tgctctgtgc	cctgggcctg	tgagcagggg	acgcccccta	tgatctcctg	gatggggacc	600
tctgtgtccc	ccctgcaccc	ctccaccacc	cgctcctcag	tgctcaccct	catcccacag	660
ccccagcacc	acggcaccag	cctcacctgt	cagctgacct	tgcttggggc	cggcgtgacc	720
acgaacagga	ccatccaact	caatgtgtcc	tacctctctc	agaacttgac	tgtgactgtc	780
ttccaaggag	aaggcacagc	atccacagct	ctggggaaca	gctcatctct	ttcagtccta	840
gagggccagt	ctctgcgctt	ggtctgtgt	gttgacagca	atccccctgc	caggctgagc	900
tggacctgga	ggagtctgac	cctgtacccc	tcacagccct	caaaccctct	ggtactggag	960
ctgcaagtgc	acctggggga	tgaaggggaa	ttcacctgtc	gagctcagaa	ctctctgggt	1020
tcccagcacg	tttccctgaa	cctctccctg	caacaggagt	acacaggcaa	aatgaggcct	1080
gtatcaggag	tggtgctggg	ggcggtcggg	ggagctggag	ccacagccct	ggtcttccct	1140
tccttctgtg	tcattctcat	tgtagtgagg	tcctgcagga	agaaatcggc	aaggccagca	1200
gcggaactgg	gagacatagg	catgaaggat	gcaaacacca	tcaggggctc	agcctctcag	1260
ggtaacctga	ctgagtcctg	ggcagatgat	aacccccgac	accatggcct	ggctgcccac	1320
tcctcagggg	aggaaagaga	gatccagtat	gcacccctca	gctttcataa	gggggagcct	1380
caggacctat	caggtcaaga	agccaccaac	aatgagtact	cagagatcaa	gatccccaa	1440
taagaaaatg	cagaggctcg	ggcttgtttg	agggttcacg	accctccag	caaaggagtc	1500
tgaggctgat	tccagtagaa	ttagcagccc	tcaatgtctg	gcaacaagac	atcagaactt	1560
attcctcttg	tctaactgaa	aatgcatgcc	tgatgaccaa	actctccctt	tccccatcca	1620
atcggtccac	actccccgcc	ctggcctctg	gtaccaccaa	ttctctctctg	tacttctcta	1680

aggatgacta ctttagattc cgaatatagt gagattgtaa cgtgaaaaaa aaaaaaaaaa 1740
 aaaaaaaaaa 1748

<210> 55
 <211> 766
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (670)..(670)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (713)..(713)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (721)..(721)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (728)..(728)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (731)..(731)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (756)..(756)
 <223> n equals a,t,g, or c

<400> 55
 ggcgagacgc gttcaccacc atatgcactg ttgtcaactc ccttgagat ggcgccaagc 60
 cccacaggaa gccttcctcc tctgcctcct ctctctcctc ctgcctcctg ttctccttgg 120
 atgcagccgg ggcctccctg gccacactcc ctggaggctc catcctgcag ccgcgccct 180
 ccttgccctc ctctccacg atgcacttgg ggctgtgtgt ttccaaggcc ctgagtacct 240
 cttgccttgt ttgctgcctc tgccaaaacc cggccaactt caaggacctt ggggacctct 300
 gtgggcccta ctaccctgaa cactgcctcc ccaaaaagaa gccaaaactc aaggagaagg 360
 tgccggccaga aggcacctgt gaggaggcct cgctgccgct tgagagaaca ctcaaaggtc 420
 ccgagtgtgc agctgccgcc actgccggga agccccccag gcctgacggc ccagctgacc 480
 cggccaagca gggccactg cgcaccagt cccggggcct gtcccggagg ctgcagagct 540
 gctactgctg tgatggccgg gaggatgggg gcgaggaggc agccccagcc gacaagggtc 600
 gcaaacatga gtgcagcaag gaggtccgg cagagcccgg cggggaggcc caggaagcac 660
 tgggtgmatn aagcctgttm ccgtgttgga ccgggggggt tttaactggt ggnccggggaa 720
 ntcttttngg nttgcaagag gccaatataa gttggnccct ggaaaa 766

<210> 56
 <211> 2803
 <212> DNA
 <213> Homo sapiens

<400> 56
 cccacgcgtc cgcgaccac gcgtccgggg ggaggtaact gcagtaagtc ccgcttggcc 60
 ctggagtcca cgcggatttt cgaagctggg gctggcaaga ggccgctgga caccacgctc 120

cagtcgtcag	cccaatttcc	agctgaacag	cgcgaggcgg	cggcagcgag	ccgggtccca	180
ccatggccgc	gaattattcc	agtaccagta	cccggagaga	acatgtcaaa	gttaaaacca	240
gctcccagcc	aggcttcctg	gaacggctga	gcgagacctc	gggtgggatg	tttgtggggc	300
tcatggcctt	cctgctctcc	ttctacctaa	ttttcaccaa	tgagggccgc	gcattgaaga	360
cggcaacctc	attggctgag	gggctctcgc	ttgtgggtgc	tcccagacgc	atccacagtg	420
tggctccgga	gaatgaagga	aggctgggtg	acatcattgg	cgcttacg	acatccaagc	480
ttttgtctga	tccaaactat	ggggtccatc	ttccggctgt	gaaactgcgg	aggcacgtgg	540
agatgtacca	atgggtagaa	actgaggagt	ccaggaggta	caccgaggat	gggcagggtga	600
agaaggagac	gaggtattcc	tacaacactg	aatggaggtc	agaaatcatc	aacagcaaaa	660
acttcgaccg	agagattggc	cacaaaaacc	ccagtgccat	ggcagtgagg	tcattcatgg	720
caacagcccc	ctttgtccaa	attggcaggt	ttttcctctc	gtcaggcctc	atcgacaaag	780
tgcacaactt	caagtccttg	agcctatcca	agctggagga	ccctcatgtg	gacatcattc	840
ggcgtggaga	ctttttctac	cacagcgaaa	atcccaagta	tccagagggtg	ggagacttgc	900
gtgtctcctt	ttctatgctt	ggactgacgc	gcgatgacct	tgacctgggc	ccagctcacg	960
tggctactgt	gattgcccgg	cagcgggggtg	accagctagt	cccattctcc	accaagtctg	1020
gggatacctt	actgtccttg	caccacgggg	acttctcagc	agaggagggtg	tttcatagag	1080
aactaaggag	caactccatg	aagacctggg	gcctgcgggc	agctggctgg	atggccatgt	1140
tcatgggcct	caaccttatg	acacggatcc	tctacacctt	ggtggactgg	tttctgtttt	1200
tccgagacct	ggtcaacatt	ggcctgaaag	cctttgcctt	ctgtgtggcc	acctcgctga	1260
ccctagctgac	cgtggcggct	ggctggctct	tctaccgacc	cctgtggggc	ctcctcattg	1320
ccggcctggc	ccttgtgccc	atccttggtg	ctcggacacg	ggtgccagcc	aaaaagttgg	1380
agtgaaga	ccctggcacc	cggccgacac	ctgcgtgagc	cctaggatcc	aggtcctctc	1440
tcacctctga	cccagctcca	tgccagagca	ggagccccgg	tcaatttttg	actctgcact	1500
ccctctcctc	ttcagggggc	agacttggca	gcattgtgcac	caggttgggtg	ttcaccagct	1560
catgtcttcc	ccacatctct	tcttgccagt	aagcagcttt	ggtgggcagc	agcagctcat	1620
gaatggcaag	ctgacagctt	ctcctgctgt	ttccttctct	tcttggaactg	agtgggtacg	1680
gccagccact	cagcccatgg	gcagctgaca	acgcagacac	gctctacgga	ggcctgctga	1740
taaagggtc	agccttgccg	tgtgctgctt	ctcatcactg	cacacaagtg	ccatgctttg	1800
ccaccaccac	caagcacatc	tgtgacctg	aagggcggcc	gttagtcatt	actgctgagt	1860
cctgggtcac	cagcagacac	actgggcatg	gacccctcaa	agcaggcaca	cccaaaacac	1920
aagtctgtgg	ctagaacctg	atgtggtgtt	taaaagagaa	gaaacactga	agatgtcctg	1980
aggagaaaa	ctggacatat	actgggcttc	acacttatct	tatggcttgg	cagaatcttt	2040
gtagtggtg	ggatctctga	aggccctatt	taagtttttc	ttcgttactt	tgctgcttca	2100
tgtgtacttt	cctaccctaa	gaggaaagtt	tctgaaataa	gatttaaaaa	caaaacaaaa	2160
aaaacactta	atatttcaga	ctgttacagg	aaacaccctt	tagtctgtca	gttgaattca	2220
gagcactgaa	aggtgttaaa	ttggggtatg	tggtttgatt	gataaaaagt	tacctctcag	2280
tattttgtgt	cactgagaag	ctttacaatg	gatgcttttg	aaacaagtat	cagcaaaagg	2340
atttgttttc	actctgggag	gagaggggtg	agaagcact	tgctttcatc	ctctggcatc	2400
ggaaactccc	ctatgcactt	gaagatgggt	taaaagatta	aagaaacgat	taagagaaaa	2460
ggttggaagc	tttatactaa	atgggctcct	tcatggtgac	gccccgtcaa	ccacaatcaa	2520
gaactgaggc	ctgaggctgg	ttgtacaatg	cccacgcctg	cctggctgct	ttcacctggg	2580
agtgttttcg	atgtgggcac	ctgggcttcc	tagggctgct	tatgagtggg	tctttcacgt	2640
gttgtgtcca	tagctttagt	cttcctaaat	aagatccacc	cacacctaa	tcacagaatt	2700
tctaagttcc	ccaactactc	tcacaccctt	ttaaagataa	agtatgttgt	aacaaaaaaa	2760
aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaa		2803

<210> 57

<211> 2181

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (5)..(5)

<223> n equals a,t,g, or c

<400> 57

gtacnggatt	cccggtcga	cccacgcrtc	cggcaggcag	aggggcagtg	ggcgcgggga	60
agatgattct	gggcctcccc	catctactgt	cattaaccaa	aatgaaacat	ttgccaacat	120
aatttttaaa	cctactgtag	tacaacaagc	caggattgcc	cagaatggaa	ttttgggaga	180
ctttatcatt	agatatgacg	tcaatagaga	acagagcatt	ggggacatcc	aggttctaaa	240

tggctat	gtgcactact	ttgtctcctaa	agaccttcct	cctttaccca	agaatgtggt	300
attcgtgctt	gacagcagtg	cttctatggt	gggaacccaaa	ctccggcaga	ccaaggatgc	360
cctcttcaca	attctccatg	acctccgacc	ccaggaccgt	ttcagtatca	ttggattttc	420
caaccggatc	aaagtatgga	aggaccactt	gatatcagtc	actccagaca	gcatcaggga	480
tgggaaagtg	tacattcacc	atatgtcacc	cactggaggc	acagacatca	acggggtcct	540
gcagagggcc	atcagggtcc	tcaacaagta	cgtggccac	agtggcattg	gagaccggag	600
cgtgtccctc	atcgtcttcc	tgacggatgg	gaagcccacg	gtcggggaga	cgcacacct	660
caagatcctc	aacaacaccc	gagaggccgc	ccgaggccaa	gtctgcatct	tcaccattgg	720
catcggcaac	gacgtggact	tcaggctgct	ggagaaactg	tcgctggaga	actgcgccct	780
cacacggcgc	gtgcacgagg	aggaggacgc	aggctcgcag	ctcatcgggt	tctacgatga	840
aatcaggacc	ccgctcctct	ctgacatccg	catcgattat	ccccccagct	cagtgttgca	900
ggccaccaag	acctgttcc	ccaactactt	caacggctcg	gagatcatca	ttgcggggaa	960
gctggtggac	aggaagctgg	atcacctgca	cgtggaggtc	accgccagca	acagtaagaa	1020
attcatcate	ctgaagacag	atgtgcctgt	gcggcctcag	aaggcaggga	aagatgtcac	1080
aggaagcccc	aggcctggag	gcgatggaga	gggggacmcc	aaccacatcg	agcgtctctg	1140
gagctacctc	accacaaagg	agctgctgag	ctcctggctg	caaagtgcg	atgaaccgga	1200
gaaggagcgg	ctgcggcagc	gggcccaggc	cctggctgtg	agctaccgct	tcctcactcc	1260
cttcacctcc	atgaagctga	gggggcccgt	cccacgcag	gacggcctgg	aggaggccca	1320
cggcatgtcg	gctgccatgg	gacccgaacc	ggtggtgcag	agcgtgcgag	gagctggcac	1380
gcagccaggga	cctttgtctca	agaagccata	ccagccaaga	attaaaatct	ctaaaacatc	1440
agtggatggt	gatccccact	ttgttgtgga	tttccccctg	agcagactca	ccgtgtgctt	1500
caacattgat	gggcagcccc	gggacatcct	caggctggtc	tctgatcaca	gggactctgg	1560
tgtcacagtg	aacggagagt	taattggggc	acccgcccct	ccaaatggcc	acaagaaaca	1620
gcgcacttac	ttgcgcacta	tcaccatcct	catcaacaag	ccagagagat	cttatctcga	1680
gatcacaccg	agcagagtca	tcttggatgg	tggggacaga	ctggtgctcc	cctgcaacca	1740
gagtgtggtg	gtggggagct	ggggkctgga	ggtgtccgtg	tctgccaaacg	ccaatgtcac	1800
cgtcaccatc	cagggctcca	tagcctttgt	catcctcatc	cacctctaca	aaaagccggc	1860
gcccttccag	cgacaccacc	tgggtttcta	cattgccaac	agcgagggcc	tttccagcaa	1920
ctgccacgga	ctgctgggtc	agttcctgaa	tcaggatgcc	agactcacag	aagaccctgc	1980
agggccccagc	cagaacctca	ctcaccctct	gtcctctcag	gtgggagagg	ggcctgaggg	2040
cgtcctaaca	gtgaaaggcc	accaagtccc	agtggctctg	aagcaaagga	agatttacaa	2100
cggggaagag	cagwtagayt	gytggtttgc	caggaacatg	ccgccaaact	gattgacggg	2160
gagtacagga	ttacctggca	t				2181

<210> 58

<211> 2207

<212> DNA

<213> Homo sapiens

<400> 58

ccacgcgtcc	ggaaaaaggg	aaaagatgcc	gtgtaaaatc	tcgttctgtg	tctgaattgc	60
cgtagggctc	agatcttcat	ttgaggttct	gtgtctgaat	tgccgtaggg	ctcagatctt	120
catttgagg	tatgttctat	aagttaacgt	tgatcttgtg	tgagctttcg	gtagctggag	180
taacacaggc	ggcctcacag	cgacctctcc	agcgccctcc	aaggcacatc	tgcagccagc	240
gtagctctcc	ctgggagatg	cctcctcaag	gccctgctcc	agaccacgtg	gggagggcct	300
gacagccaat	tcccaggctg	tccccacctt	tggagagtga	ccctaaacgc	tagacagatg	360
gggaatggga	aagaaaagaa	agctgcagac	ctcaagttaa	aattccctca	aaaacgtttt	420
tatttatctg	ctttttctga	aaggataaag	gctttttgaa	aattattttc	taacaaataa	480
catgaacact	tctagaaacc	ctagaaaaac	acaaagtatt	caaaatagaa	agaaaaatta	540
cccattactc	tttaagccag	cattatccat	tgcggtgctt	ttggagttgg	gtgaggccgt	600
agcctctgcc	aagtcaagga	gcccgggtgg	ggctgtggca	ttcctgcagg	gttggttttt	660
tttcttttag	atggagctct	actcttgcca	ccccagctgg	aatgtgggtg	tgtaaacagc	720
tcactgcagc	cttgaccctg	aggctcaagc	gatccttctg	ccttggcctc	ctgagtagct	780
gggatccag	gcgagagtca	ccacaccctg	tccatgttcc	tgcaggctct	gatatgcgag	840
gacgtctgtg	cttccttgcc	acattttctt	cttctttctt	gagacagacc	cttgctccat	900
caccaggcc	agagtgtggt	ggtgcgaaca	cggctcactg	cagcctcgac	cctcaggctc	960
aagcgatcct	cacgcctcgg	acccccaaag	tgtctgggatc	acaggcgaga	gtcaccatgc	1020
tggcctgaat	cttcagggtg	ttttacgggt	gaagtgtcac	ttacttaacc	atccctgttt	1080
caagagtgtg	ggtgtgtcacc	ctgtctctgc	cgtctgacctg	gcctggaccc	tcggctgtga	1140
gagggagggg	tgggctgggc	tggaggaacc	tgaagccctc	gtgatgtcac	aagcccatct	1200
ggctgggcat	cccctgctgt	gtcctgagct	gcacatgccc	cagggtggccc	ccacagcaga	1260

ggcgagccac	tggaggggtgg	agggctttcca	cgggacgggtc	ttcaggggga	gaaggaaggg	1320
cccaggcccc	caggagactc	aggagaccag	agcctggggt	caggggctca	gccaggggct	1380
cagccagggc	tggatgtccg	gagccagccc	cgcagccctg	tgttctttgt	tcttcgcaact	1440
cccaccgtcc	gtgtgaacag	ctccagcccc	acctgcgcct	ccctgtgctg	ggctccatca	1500
gggagcccag	aagacgtgtg	tgcttctgaa	attgggtccc	tacatgcctt	tgtcccagtg	1560
caccttgctc	cttccattta	ctatcgagat	ttaaatgcct	gttttctccc	cagaggttga	1620
cggatatatt	cagacgttac	gacacggatc	aggacggctg	gattcaggtg	tcgtacgaac	1680
agtacctgtc	catggtcttc	agtatcgtat	gaccctggcc	tctcgtgaag	agcagcacia	1740
catggaaaga	gccaaaatgt	cacagttcct	atctgtgagg	gaatggagca	caggtgcagt	1800
tagatgctgt	tcttccttta	gattttgtca	cgtggggacc	cagctgtaca	tatgtggata	1860
agctgattaa	tggttttgca	actgtaatat	tagctgtatc	gttctaatac	agacattgga	1920
tttgggtgact	gtctcattgt	gccatgaggt	aaatgtaata	tttcaggcat	tctgcttgca	1980
aaaaaatcta	tcatgtgctt	ttctagatgt	ctctggttct	atagtgcata	tgctttttta	2040
gccaatagga	atttttaaat	aacatggaac	ttacacaaaa	ggcttttcat	gtgccttact	2100
tttttaaaaa	ggagttttat	gtattcattg	gaatatgtga	cgtaagcaat	aaaggggaatg	2160
ttagacgtgt	aaaaaaaaaa	aaaaagggcg	gccgctctag	aggatcc		2207

<210> 59

<211> 3533

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (44)..(44)

<223> n equals a,t,g, or c

<400> 59

ttttatttac	ttcaaattaa	ctgtacttta	ctcaaataga	aaangaataa	ttttcacatt	60
atgaagctac	acaattccaa	aatacacatg	ctgaggctct	ttttaagtcc	gaattgtcta	120
gtaattacaa	aaaagtgaag	agtttacaga	tatacaagga	aataaaggcg	aattattgca	180
aagaaaacaa	gttttaatttc	actttgaatg	acaacgattt	ttctggaaaag	cagatacttc	240
actcctttta	gtttccaccc	aagccacaat	aatttcaaac	ggtcttgctg	atgacccagc	300
tggctactct	tgtttatgtg	gggactggag	gtaatgagag	ccaaaaaaag	tgctataaac	360
ctaatttggc	tagagcaagt	tcacacgaca	cgaccgtgct	ttaaaaactt	gctctccatt	420
atgtacttcc	ttccatcagg	ttggggaaaa	aaaaatgggt	gggatgggtg	gtaaacacac	480
cagtggtttc	atcagagggg	aactcactac	tcaggaggtg	acgggtgacg	ggtgccggtc	540
cctgaagtac	gcgcacaagc	tccggagggt	gcgggagctt	ccgctgccgc	ctggagggaa	600
gccggagcga	cgggggtcac	ggcggcggtc	agagggtaaa	ggtcttgctc	ccagcagcct	660
ccgcggtgga	tacgtcgcca	tcttggtatc	gcgggacaag	aaaattcatg	cgagggagac	720
gtggtgggcg	gtccttcctg	tgacacgacc	cttgagtacg	agttctatct	gattgcctcc	780
ggtactgtga	ggaaaggaca	cgactctatg	gtgaggactg	atggacatac	attatctgag	840
aaaagaaact	accaggtgac	aaacagcatg	tttgggtgct	caagaaagaa	gtttgtagag	900
ggggctcgaca	gtgactacca	tgacgaaaac	atgtactaca	gccagtcttc	tatgtttcca	960
catcggctcag	aaaaagatat	gctggcatca	ccatctacat	caggtcagct	gtctcagttt	1020
ggggcaagtt	tatacgggca	acaaagtgca	ctaggccctc	caatgagggg	gatgagcaac	1080
aatacccttc	agttaaatcg	cagcttatca	caaggcactc	agttaccgag	ccacgtcacg	1140
ccaacaacag	gggtaccaac	aatgtcactt	cacacgcctc	catctccaag	caggggtatt	1200
ttgcctatga	atcctargaa	tatgatgaac	cactcccagg	ttggctcagg	catttggaatt	1260
cctagcagga	caaatagcata	gagcagttca	gggttaggta	gccccaacag	aagctcgcca	1320
agcataatat	gtatgccaaa	gcagcagcct	tctcgacagc	cttttactgt	gaacagtatg	1380
tctggatttg	gaatgaacag	gaatcaggca	tttgggaatg	ataactcctt	atcaagtaac	1440
atttttaatg	gaacagacgg	aagtgaataa	gtgacaggat	tggacctttc	agattttcca	1500
gcattagcag	accgaaacag	gaggggaagga	agtggtaacc	caactccatt	aataaaccct	1560
ttggctggaa	gagctcctta	tgttggaatg	gtacacaaac	cagcaaatga	acaatcccag	1620
gacttctcaa	tacacaatga	agattttcca	gcattaccag	gctccagcta	taaagatcca	1680
acatcaagta	atgatgacag	taaatctaata	ttgaatacat	ctggcaagac	aacttcaagt	1740
acagatggag	ccaaattccc	tgagataaaa	agttcaacaa	cacaaaataa	taaccagcag	1800
aaaaaaggga	tccaggtggt	acctgatggg	cgggttacta	acattcctca	agggatgggtg	1860
acggaccaat	ttggaatgat	tggcctgtta	acatttatca	gggcagcaga	gacagaccca	1920
ggaatggtac	atcttgcatt	aggaagtgaac	ttacaacat	taggcctcaa	tctgaactct	1980

cctgaaaatc	tctaccccaa	atttgcgtca	ccctgggcat	cttcaccttg	tcgacctcaa	2040
gacatagact	tccatgttcc	atctgagtac	ttaacgaaca	ttcacattag	ggataagctg	2100
gctgcaataa	aacttggccg	atatggtgaa	gaccttctct	tctatctcta	ttacatgaat	2160
ggaggagacg	tattacaact	tttagctgca	gtggagcttt	ttaaccgtga	ttggagatac	2220
cacaaagaag	aacgagtatg	gattaccagg	gcaccaggca	tggagccaac	aatgaaaacc	2280
aatacctatg	agagggggaa	atattacttc	tttgactgtc	ttaactggag	gaaagtagct	2340
aaggagttcc	atctggaata	tgacaaatta	gaagaacggc	ctcacctgcc	atccaccttc	2400
aactacaacc	ctgctcagca	agccttctaa	aaaaaaaaaa	aaaaaaaaaa	aaaaagactt	2460
cccttttctt	ggggtatggc	tgtctcagca	caatactcaa	cataactgca	gaactgatgt	2520
ggctcaggca	ccctgggttt	aattccttga	ggatctggca	attggcttac	gcaaaaagtc	2580
accatttgag	gtcctgcctt	actaattatg	tgtctgccaa	caactaaatt	tgtaatttgt	2640
ttttctctag	tttgagcagg	gtctgaattt	tttcatttat	ttcctttttt	gccagcagac	2700
agacttgagt	ctgtaaagac	aagcaaatac	actgacagaa	gtttaccata	gtttctaaaa	2760
tgtaaaaaag	aaaaccccca	aaagactcaa	gaaaattaga	ccacaaattt	tgcatgttgc	2820
attgtagcac	tattggtaat	aaaataacaa	atgtttgtgc	atttttatgt	gaagatcctt	2880
ctcgatattc	atttggaaag	atgagcaaga	ggctctgctc	cttcatttta	cttccccttc	2940
tgtttttgaa	aggcagtttc	gccaagctta	atgcaagaat	atctgactgt	ttagaagaaa	3000
gatattgcc	caatctctgg	atgggttttc	agggttgtgt	tattactgag	cttcactctt	3060
ccagaatgag	caaaacactg	tccagtcttt	gttacgattt	tgtaataaat	gtgtacattt	3120
tttttaaat	tttgacatc	acatgaataa	aggtagtat	gtacgaatgt	gtatatatta	3180
tatatatgac	atctattttg	gaaaatgttt	gccctgctgt	acctcatttt	taggaggtgt	3240
gcatggatgc	aatatatgaa	aatgggacat	tctggaactg	ctgggtcagg	gactttgtcg	3300
ccctgtgcac	taaaagggcc	agattttcag	cagccaagga	catccatacc	caagtgaatg	3360
tgatgggact	taaaagaagt	gaactgagac	aattcactct	ggctgtttga	acagcagcgt	3420
ttcataggaa	gagaaaaaaa	gatcaatctt	gtattttctg	accacataaa	ggcttcttct	3480
ctttgtaata	aagtagaaaa	gctctcctca	aaaaaaaaaa	aaaaaaactc	gag	3533

<210> 60

<211> 867

<212> DNA

<213> Homo sapiens

<400> 60

ggcacgagca	ggtactgggt	gactgcctgg	ctgaggaaaa	gttaactaga	cacttgggga	60
aaggagatcc	aagggagtaa	gaggcaaaat	gcctttgcat	gcttttcttc	ctatctcttt	120
ttctttctct	cctctcact	ctctcccttc	cttcccttct	tcctttctct	ttcttttttt	180
ttctcttttt	ccccacctc	tctgcctgcc	tccttctctc	cctccctctc	cctcccttcc	240
ccctcccttc	ctccctccct	tccttctctc	cttcccttct	tccttctctc	cttccctctc	300
tcctctctcc	ctccttccct	gccttctctc	cttctgtctg	ccaacttgcc	agaaggagcc	360
caagaaaaag	caccagatg	cttcagtc	cttcttagaa	ttcttctttt	ttttatgttc	420
agaaaaagatg	gaaattcatt	tctgctaaag	agaaagaaaa	aattggaaga	caggggtgaag	480
gtgaacaggc	ccattataag	aaagaaacaa	aaatctatat	tctgtctaca	aggaagcgag	540
agagagaaaag	agagagaaga	aagaagttcc	aggattctaa	tgtaccaaag	ggatctcctt	600
tttcttgttt	tgttctgaaa	atttcaccaa	aagagcacag	gagaacatct	tggtctaatc	660
attggcgatg	atgtaagaaa	actgagagaa	atgaaagaaa	tgaagaatta	ctgctgcaga	720
taatatatag	ccttgaggaa	agaaaggctt	ttaagattat	agatataaag	gctattgctg	780
tattctggga	taaaagaaag	tctgatgtca	gggaaagggg	aagttggaaa	aactggaaaa	840
agaaaaaaga	aaaaaaaaaa	aaaaaaa				867

<210> 61

<211> 1558

<212> DNA

<213> Homo sapiens

<400> 61

ggttttggag	tatatatatt	gtatgccatg	aactatattt	ttctgcttat	ggctttgcct	60
catttaattg	ccatagcact	tacatggggc	aggatttcat	tttctgtctt	agcaataaag	120
gaaactgaat	ttcagagatg	tcaggtaacc	tgctacttct	acacactagg	agttttgatg	180
tttaattttg	aactaagatc	tatctggctt	gaaagctctt	tgcattaaac	aaccttgaac	240
aatatacttg	gaacgtaggt	gtgttttttg	cacagaacat	ggcatgtgtg	tgagggattg	300
aacacagact	tgcccagatt	caaacttacc	aatcttctgt	ttcatgtgcc	cagaagaaac	360

agcctgtttc	tcagcctcaa	acccaaactt	ctagttgtct	tgattgggtc	agcctgactg	420
tccaactctg	atztatagct	gtgattgggg	gagctgagat	tacacagtgt	aggcaggcag	480
aagggcccca	ggcctattga	tatgggtgag	gacaatactc	acgcactccc	ttcacttact	540
cactcttcca	aggtcttggc	ttgaacccaa	ttttttttga	gagaataaac	caggcttttt	600
gttctccact	tggcctgact	ccatttctgg	cattccagcc	atgtatttag	ctgttatcag	660
ctttcagatt	tagascaaag	ccttgtttcc	aataagcttg	tttctctgaa	gtaattgtta	720
aaatataatt	ttcagaaaaa	ggttaaataca	tgactcatac	aaatataaaa	atgaacatgt	780
gctaaagatt	tttattttcac	tcatgtgata	tgaagtaacc	agacagaagt	tataaccagt	840
acatatggaa	agtcaaaaag	cacaaattca	tatgtagtaa	aggaattgga	ttgcaaatga	900
aggcaaaact	gttttttycta	caggggtggag	ggaagataat	caaaatgcta	gaaccagaat	960
ttscatgcct	gtcacttagc	ttcaatttac	aaaagcccag	aataactcaa	aggcaaatte	1020
tagccctgca	aatatcagcc	ctaaagctgt	gctgtggcca	gtgcatagtt	ttctattgaa	1080
gtacaatttt	ttcccccatt	acattatctc	tcagagggag	tccaaattgc	ttccctttca	1140
ctcagcagat	ctgttcagtc	aacagatggt	aaatagctac	agcgtatcag	gcacaaataa	1200
ttctttataa	aataaagtaa	caaactatat	gttgtttcaa	agttccagtt	aaggccagcc	1260
gtggtagctc	acccttataa	tccaacact	gggaggccga	ggcaggccga	tcacttgggc	1320
taggagttcc	ataccagcat	ggccaacatg	gtgaaaccct	gctctactag	aatgcaaaaga	1380
ttagccaggt	gtggtggcgc	atgccggtag	tccaggctac	tcagggtggc	gaggcacagg	1440
aatggcttga	gcctgggagg	cggaggttgc	agtgaagcga	gattgcgwc	gctgcactcc	1500
agcctgggca	acactgtgag	actcctgtct	acaaaaaaaa	aaaaaaaaaa	aactcgta	1558

<210> 62

<211> 2199

<212> DNA

<213> Homo sapiens

<400> 62

ggcacgagct	tttccatctt	gagcttggca	gcctgtctag	ttgtggaagc	tgtgggtgtgg	60
aaatcgggtga	ccaagaatcg	gacttcttat	atgcgccaca	cctgcatagt	gaatatcgct	120
gcctcccttc	tggtcgccaa	cacctgggtc	attgtgggtc	ctgccatcca	ggacaatcgc	180
tacatactct	gcaagacagc	ctgtgtggct	gccaccttct	tcattccact	cttctacctc	240
agcgtcttct	tctggatgct	gacactgggg	cctcatgctg	ttctatcgcc	tgggttttcat	300
tctgcatgaa	acaagcaggt	ccactcagaa	agccattgcc	ttctgtcttg	gctatggctg	360
cccacttgcc	atctcgggtca	tcacgctggg	agccaccag	ccccgggaag	tctatacgag	420
gaagaatgtc	tgttgggtca	actgggagga	caccaaggcc	ctgctggctt	tcgccatccc	480
agcactgatc	attgtgggtg	tgaacataac	catcactatt	gtggctcatca	ccaagatcct	540
gaggccttcc	attggagaca	agccatgcaa	gcaggagaag	agcagcctgt	ttcagatcag	600
caagagcatt	gggtctctca	caccactctt	gggcctcact	tgggggtttt	gtctcaccac	660
tgtgttcccc	gggaccaacc	ttgtgttcca	tatcatattt	gccatcctca	atgtcttcca	720
gggattatct	attttactct	ttggatgcct	ctgggatctg	aagggtacagg	aagctttgtct	780
gaataagttt	tcattgtcga	gatgggtctt	acagcactca	aagtcaacat	ccctgggttc	840
atccacacct	gtgttttcta	tgagttctcc	aatatcaagg	agatttaaca	atttgtttgg	900
taaaacagga	acgtataatg	tttccacccc	agaagcaacc	agctcatccc	tggaaaactc	960
atccagtgtc	tcttcgttgc	tcaactaaga	acaggataat	ccaacctacg	tgacctcccg	1020
gggacagtgg	ctgtgctttt	aaaaagagat	gcttgcgaag	caatggggaa	cgtgttctcg	1080
gggcagggtt	ccgggagcag	atgccaaaaa	gactttttca	tagagaagag	gctttctttt	1140
gtaaagacag	aataaaaaata	attgttatgt	ttctgtttgt	tccctcccc	tcccccttgt	1200
gtgataccac	atgtgtatag	tatttaagtg	aaactcaagc	cctcaaggcc	caacttctct	1260
gtctatatatt	taatatagaa	tttcgaagag	acattttcac	tttttacaca	ttgggcacaa	1320
agataagctt	tgattaaagt	agtaaagtaa	aggctaccta	ggaaataact	cagtgaattc	1380
taagaaggaa	ggaagggaaga	aagggaaggaa	agaaggagg	gaaacaggga	gaaagggaaa	1440
aagaagaaaa	agagaaaagat	gaaaatagga	acaaataaag	acaaacaaca	ttaaggggcca	1500
tattgttaaga	tttccatggt	aatgatctaa	tataatcact	cagtgcacaa	ttgagaattt	1560
ttttttaatg	gctcaaaaat	ggaaactgaa	agcaagtcac	ggggaatgaa	tactttgggc	1620
agtatcttcc	tcatgtcttc	ttagctaaga	ggaggaaaaa	aaggctgaaa	aaataggagg	1680
gaaattcctt	catcagaacg	acttcaagtg	gataacaata	tttataagaa	atgaatggaa	1740
ggaaatatga	tcttcctgag	actaactttg	tatgttaagg	tttgaactaa	gtgaatgtat	1800
ctgcagagga	agtattacaa	agatatgtca	ttagatccca	agtgttgatt	aaatttttat	1860
agtttatcag	aaaagcctta	tatttttagtt	tgttccacac	tttgaaagca	aaaaatatat	1920
atttgatata	cccttcaatt	gccaaatttg	atatgttgca	ctgaagacag	accctgtcat	1980
atatttaatg	gcttcaagca	ggtacttctc	tgtgcattat	agaatagatt	ttaataatct	2040

tatagcattg	tatattatta	ttgctgttgt	cactgttatt	attattgtgg	atactggccc	2100
ttggtgtgtt	gcatagetcc	ctatgtattc	tctgtttcca	tctttaagtt	cccagaccaa	2160
tatacattaa	gagttttgaa	aaaaaaaaaa	aaaaaaaaaa			2199

<210> 63
 <211> 832
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (827)..(829)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (831)..(831)
 <223> n equals a,t,g, or c

<400> 63	
gaattcggca	cgagtatgaa actaacaaca tagaatgccc cccaaacaaa ttcctctaac 60
ctcactgagt	ttacttgccc tattactatt tttttttttt aagatcttct gtctcttggt 120
tttgttttat	cccttacctg atgaaagtga acatttctag tggagaaaga agatcacagt 180
tctctaatat	gggcatttaag agaggggtac agctagaggg gaggtgaaaa cctgcctcca 240
ctgggggtgaa	aaacagtgtg ctgaggtttc agccagtgat tacactgggt aatcaaccag 300
tcccatgttt	cacaaaggag ttgtaatgat taacagttca ggtatgctty tgaggaaatc 360
taattgagac	ctttggaaaa tagcattggt atgaatgggt tgggtgttacg ccctggaggg 420
gaaaaggcta	ggaaaaacat ttttaacttt caagtgtatt taaattaaca tccaaatgtt 480
tcagtgtgct	ttactggaga ctgcctgagt ttggaattca aatattgtaa ccaaattact 540
ccaggtttct	gaactaaaaat gatctattga tgtttctcaa agtatagatc acagagtaag 600
aaaagaggaa	atcaagtctg gtttatgaca aacttttttc catgttaaca ttggacccaa 660
agatgttamt	aagagctttt tactactgtg agagraccag cgtgatgtga agacaacgaa 720
cattttaaga	agtttgacta gtagacattt cgtttaagtc ttttggaggg tcttggttga 780
caaccacaaa	ttttattgtg gctccccagg ctggggagaac gtggaannnc na 832

<210> 64
 <211> 1336
 <212> DNA
 <213> Homo sapiens

<400> 64	
ccacgcgtcc	ggagttccac aaaatttggt agtcatcaaa taatagagtt tttcttaagt 60
gaccacttac	atactcatct acaataaacc ccaactaact aatttttcac ttgtgttacc 120
tcattgcta	atccgtggac agtaaatgtc ctgttgtgtt ccttttgctt ttcattcctg 180
tgatcttatg	tcacatggaa tgtaaaggcc acatatatat atgtgtgtgt gtgtgtgtgt 240
atatgtatat	ttttaagaat atttagtctg gatttcatga aattgacttc tgaaataatt 300
tgcctcaatt	ttgtttcctg gtggtttgag aagaaagtcc ctgtggtgaa atgaaaaggg 360
gataaaggga	agtacttatt ttaaaacata agtaacttgt ggattgttga atactggaaa 420
aagagtgtta	cttccccgtt aacctacgcc tcgtgtaatc cttcagggtg gaagtcggat 480
cgcagaccgt	gtatatgaca taccagaaa tttccccctt gctttggatc ttggttgtgg 540
aagaggttac	attgcacaat atttgaataa gcttcagtta ttccattgca ggaaactatt 600
ggaaagtgtt	tccaagctga cattgcagaa aatgctttgt ttgcattggg tgaatgacct 660
tcctagagca	cttgagcaga ttcattatat tttaaaacca gatggagtgt ttatcgggtg 720
aatgtttgga	ggcgacacac tctatgaact tcggtgttcc ttacagttag cggaaacgga 780
aagggaagga	ggattttctc cacacatttc tcctttcact gctgtcaatg acctgggaca 840
tctgcttggg	agagctggct ttaatactct gactgtggac actgatgaaa ttcaagttaa 900
ctatcctgga	atgtttgaat tgatggaaga caaaagtcca gaatgttgac 960
ctaattttac	aaaacaagct gcatatcagc tgatgaatgc atgagaaatt ttcaaggctt 1020
tcacagtggg	cttaaggtat ggggtgagag aactgtgctt ggaatagaaa agccctgctg 1080
catcgagaca	caatgctggc agctgcggca gtgtacagag aaatgtacag aaatgaagat 1140
ggttcagtac	ctgtacata ccagatctat tacatgatag gatggaaata tcatgagtca 1200

caggcaagac	cagctgaaag	agggttccgca	actgtgtcat	ttggagagct	aggaaaaata	1260
aacaacctta	tgccaccggg	gaaaaaatca	caataaatat	ttattcagtg	ttaaaaaaa	1320
aaaaaaaaa	aaaaaa					1336

<210> 65

<211> 799

<212> DNA

<213> Homo sapiens

<400> 65

ggagacgggtg	ggtgaccaga	gagtcctgtc	tatcctagga	ggagaacatt	cagcccaa	60
cccagcccca	tcatgcacag	atcagagcca	tttctgaaaa	tgtcgtgct	gattctgctt	120
ttcctgggat	tggcagaagc	ctgtactcct	cgtgaagtca	acttgctgaa	agggatcata	180
ggtctcatga	gcagactgtc	accggatgag	atcctaggct	tgtcagcct	ccaagtactg	240
catgaagaaa	caagtggctg	caaggaggaa	gttaaaccct	tctcaggcac	caccccatcc	300
aggaaaccac	tccccaaag	gaagaacacg	tggaaacttc	tgaaatgcgc	ctacatgggtg	360
atgacctacc	tcttcgtatc	ctacaacaaa	ggggaactgg	tcaacttttc	ctcccaagt	420
ttactgccac	tactgtaact	tggaaactgga	catcagggat	gateccctgct	gttctttcta	480
gtgagcctgc	tccatctcag	cttagccttc	acaaggcctc	catctcccag	gcattctaac	540
ctctgaagaa	agctctctgt	ccctggact	gcctgtgtgg	agggtaatga	actgggtcct	600
ttaaggaatg	gcacctgggt	gcccagaggc	atggccagaa	ggtgtctgtg	ggggccatgc	660
cttaggggga	tgcaccagg	gcggctgaga	gagcaactgc	aggagtcttc	cctaaaatct	720
ctcctccaga	tgttctcga	actttcccca	ctacttccat	aataaaatgt	atacttggtg	780
aaaaaaaaa	aaaaaaaaa					799

<210> 66

<211> 1347

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (83)..(83)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (334)..(334)

<223> n equals a,t,g, or c

<400> 66

gggcagccct	caggccctcc	ggcagcctgg	cggggcccca	gtggccatgg	cagcactggt	60
gtggctgctg	gcgggagcac	atngtcaagc	ctcaacaagt	ggatcttcac	agtgcacggc	120
tttgggcggc	ccctgctgct	gtcggccctg	cacatgctgg	tggcagccct	ggcatgccac	180
cggggggcac	ggcgcccat	gccaggcggc	actcgtgcc	gagtcctact	gctcagtctc	240
acctttggca	cgtccatggc	ctgcggcaac	gtgggcctaa	ggctgtgccc	ctggacctgg	300
cacaactggt	tactaccacc	acacctctgt	tcancctggc	cctgtcggcg	ctgctgctgg	360
gccgcccga	ccaccactt	cagttggccg	ccatgggtcc	gctctgcctg	ggggccgcct	420
gcagcctggc	tggagagtcc	cggacacccc	ctacggctg	tggcttcctg	ctcgcagcca	480
cctgcctccg	cggactcaag	tcggttcagc	aaagtgcctt	gctgcaggag	gagaggctgg	540
acgcggtgac	cctgctttac	gccacctcgc	tgcccagctt	ctgcctgctg	gcgggtgcag	600
ccctggtgct	ggaggctggc	gttgcccccac	cgcccactgc	tggcgactct	cgctctggg	660
cctgcctcct	gctcagctgc	ctcctgtctg	ttctctataa	cctggccagc	ttctccctgc	720
tggccctcac	ctctgccctc	accgtccacg	tcctgggcaa	cctcaccgtg	gtgggcaacc	780
tcctcctgtc	cgggtgtgtg	tttggcagcc	gcctcagctg	cctcagctac	gtgggcatcg	840
cactcactct	ttcaggaatg	ttcctttacc	acaactgcga	rttcgtggcc	tcctgggctg	900
cccgctgggg	gctgtggcgg	agggaccagc	ccagcaaggg	tctttgagac	ctgggggatc	960
tcaggagcca	cctgggatgg	ccctggcctg	aatccagcct	cgcctgtggc	catagaagga	1020
atggagaaca	gggctgggca	tggtsctca	cgcctataat	cccagcactt	ccagagtccg	1080
agggtgggtg	atcacctgag	gccaggagtt	cgagaccagc	ctggctagca	tggcaaaacc	1140
tcctctctac	taaaaataga	aaaattagct	gggcatggtg	gcgcgtgcct	atagtcacag	1200

```

ctacatggga ggctgaggtg ggaggatcac ttgagccctg gagatcgagg ctgcagtaag 1260
ccaagatcgc atgctactgc actccagcct gggagacaga gcgagacgct gtctcaatta 1320
aaaaaaaaaa aaaaaaaccgg cacgtag 1347

```

```

<210> 67
<211> 642
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (41)..(41)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (49)..(49)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (64)..(64)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (607)..(607)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (621)..(621)
<223> n equals a,t,g, or c

```

```

<400> 67
taaaggggaa aaaaaaaggc tgggaaggct tccaaccgcg ntttgcgnc cggcttctag 60
gaantagtg aatcccccg gctggcagga attcggcacg agaaaatgac ttcagacaaa 120
tatgatcaat ctctacagtc ccctgatgaa ttccacaggt tcccaccacc atcagttcta 180
cctattcatc tcatccatgc tcattgttct gectctttcc tggtccctatg gatgccctgg 240
catgtttgtt tctttctttc tggcctccta ttccctccc ctcagacatc acttcagcat 300
ctgtgccttc tcacttccct taccctgggt gttaccattt cagcctatga gcatgccatt 360
aatttgccat ctttacaaaa ttctctcttg acttcacatc cctctgtagc tgccctctcc 420
cttctctcct cttctttaca aaaaaactcc ttaaaagaac tggtggctgg gcacagtgg 480
tcaactctat aatcccagca ctttcagaag ccaaggtggg aacatcactt gaggccaaga 540
ggtcgagacc agcccaggca acacagttag acctcatcac tacaaaaaaa aaaaaaaaaa 600
actcganggg ggggccggta nccaattggc cttaaagttag tc 642

```

```

<210> 68
<211> 802
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (105)..(105)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (730)..(730)
<223> n equals a,t,g, or c

```

<220>
 <221> misc_feature
 <222> (755)..(755)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (757)..(757)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (777)..(777)
 <223> n equals a,t,g, or c

<400> 68
 cgtgcctgta gtaagctcat ccctgccttt gagatgggtga tgcgtgccaa ggacaatggt 60
 taccacctgg actgctttgc atgtcagctt tgtaatcaga gattntgtgt tggagacaaa 120
 tttttcctaa agaataacwt gaycctttgc caracggact acgaggaagg tttaatgaaa 180
 gaaggttatg caccmccmgt tcgctgatct atcaacatca ccccatthaag aatacaaaagc 240
 actacattct tttatctttt ttgctccaca tgtacataag aattgacaca ggaacctact 300
 gaatagcgtg gatataaggaa ggcaggatgg ttatatggaa taaaaggcgg actgcatctg 360
 tatgtagtga aattgccccca gttcagagtt gaatgtttat tattaaagaa aaaagtaatg 420
 tacatatggc tggatttttt tgcttgctat tcgtttttgt gtcacttggc atgagatggt 480
 tattttggac tattgtatat aatgtattgt aatatttgaa gcacaaatgt aatacagttt 540
 tattgtgtta ccatttgtgt tccatttgct yctttgtatt gttgcattta gtacaatcag 600
 tgtttaaact tactgtatat ttatgctttc tgtattttacc agctatttta aatgagctgt 660
 aactttctag taaagaattg aaaagcaaat cctcactaaa ggatacacag gataggataa 720
 agccaagtcn catcaacatt aaaaaatact aaaaananaaa acacaaaaaa aaaaaanccc 780
 gggggggggc cggaacccat tc 802

<210> 69
 <211> 470
 <212> DNA
 <213> Homo sapiens

<400> 69
 ggcacgaggg aaatcttgca cataggcagg taaataatta taaatgggtga agtggattat 60
 tctgagctgc ttaattttta agggaaagag aactttaaac tcttcaacct tttatgctgc 120
 taataagagt tccacaatca atagaaatct atcttggcag gcacttcctt ttaccacta 180
 gaattttttc ccttgggagt tcacgatccc cagaaactgt gatatgagcc attcaatatt 240
 gatgtactaa aacagtgtc tgcttaata cagtttttca acatacagtc ttggaagaaa 300
 caaaatccaa aataaattcc aatagtccag taacaggaat aaagacaact attgcaaatt 360
 aaatcttaca gacttatatg aaagctgttg ttaacagctg ggtactagtt atttgaaaag 420
 tttctcgtgc cgaattcgat atcaagctta tcgataccgt cgacctcgta 470

<210> 70
 <211> 1881
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (70)..(70)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (126)..(126)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (1860)..(1860)
 <223> n equals a,t,g, or c

<400> 70
 atttttcctt ttccttaaca atacctttgg ccattttttt ccagttcact atgtttgtat 60
 actaactttt cttcagcctt ttaatgcgaa gcaactagta gagcatgctt tcaggatctg 120
 acagcncctgc tagtagagcg aagtattttat taatacagaa ttaaccttmg ccccttttaa 180
 gtcaagtctg tctaatactaa cttagcgcctc gctttgcctt ctcacaatgc tcaactagcca 240
 tcattgtcac ccttctcttc cagatccact tcctcatgat actgtcttct aactgggctt 300
 acttaaagga tgcgagcaaa atgcaggctt accaggatat caaagcaaag gaagaacagg 360
 aactgcaaga tatccagtct cgggtcaaaag aacaactcaa ttcttacaca taaatgtttg 420
 ccagagtgtt tcggccgacg tatttacage tctgacaaat catcagacag ctgctctgca 480
 gtacagatgt gtatcccacc aaactaatgt agatgtacaa acacttcact gtctgtctca 540
 agctgctggg atgtatctct aggaaaacct tccagtgggt aaatcttttt ctttagaaca 600
 aatatggag gtttcattgt agccatttta aaaggcaaca ctttgacaaa atgactgttc 660
 ataactttgg aatttgtggc atgttcacat ttattgctag ggcaattcta ccaagacact 720
 catctggaata tgtcacact cttaataggg acctgtgact ccttaataag gacctgtgac 780
 atgcccagca tcaagggata agaccgtaaa ttcacatata tgccatctgt cctcaagtgt 840
 tatctacata ggaaataaaa tggaaattgat gtaaggttcc atttctgaca gctgacattt 900
 attaaacttt ggatcaaaga taatgtgatt cttatgattg atttctcaaa ctagcttttc 960
 cctccaagt ccaggaccca ttaatttctt gagccaatca gaaatatatt tttcaataat 1020
 gctaaaatta gctacaattc tgctgacctt actattaaag aatctggatg ctggactcac 1080
 tgacaagctt tccagaagca attttataac agatttcatt ttaacaaaat actgatccaa 1140
 ttttcattat tcttgagaaa tgtcagcttt gccttaatga gtatttgctt taaatttcta 1200
 agaatttata tcataactag agaccctaat atctttcaca gaattttgtt ccataaatgt 1260
 ttttcttaat tattaagaag tgttacctta ttaaaatgac caccattcta aaccattttt 1320
 cagtgtctg gatagcaagt ttacagtttc ataccaacta tctaaaacct aattgcaaat 1380
 tgaccacaga cctctaacct cctactttta tagacttgaa tacttaagta atttaaatta 1440
 ggggttggtat ttcatTTTT tcttatctaa atcttagttt cctggaataa taaagtttga 1500
 tgttcagcaa gagaactgct tgagttaaag ccattttcaa aagaaacttg ccttttacat 1560
 tattgtgttc cagaacatta agtgactgta ggtactgggt attagtgatg gtaaaacttg 1620
 tgttgctctt tatgaaatga tccatataac tgttgggtgc atcagtgtt ttcaaagggg 1680
 ctgcttacta tagggttaac tatgtatatt cattgttaag agttaacttg tggtttggct 1740
 gtttcttgga ttttataaca tacatgtgca gaaatgtatt caaatgaaag gaagcatacc 1800
 tttatcaaga tgctatttaa attgaacatc aagtataaaa aaaaaaaaaa aaaaaaatn 1860
 ctgcgccga caaggaatt c 1881

<210> 71
 <211> 541
 <212> DNA
 <213> Homo sapiens

<400> 71
 tgcaggtaac cgttccggaa ttcccggtt cgacccaagg ggtcccgta tgccttgtca 60
 tggcttctt gcacagggcc tcagcctggc acctctgcca ccgtgggctc tctgttgtgt 120
 gggggtgtcc cgtgcattgc aggacatcca gcagcatccc cggcctcctg ctccgtgcca 180
 gttagcgcgc accccgcgt cgtgacagcc caggtctccc ggtgtgcaga atgcccgtg 240
 gtcattgtga gaggtacagg ggtgctgccc ccagggtttg aacgctgtct aactcccacc 300
 tctgtgtgtg ctctcccctg tgtgtagcgt ggagtcactg gatgagtgtg gtgacctccc 360
 tgtgtccagc tgccctgggc tgcaagcagg tccctcctgc agccctccag gccaccctta 420
 agcagagctg gaccagcctg gccaacatgg tgaaccccca tctctactaa aaatacaaaa 480
 attagccaag cgtggtggaa ctctgtctca aaaaaaaaaa aaaaaaaaaa aaagggcggc 540
 c 541

<210> 72
 <211> 762
 <212> DNA
 <213> Homo sapiens

<400> 72

ggcagcagtg	cctctacgtc	atgtcttctc	caatgtcatg	attcacgtcg	tgcaagtactg	60
ttttggactt	gtctattatg	tccttggttg	cctaactgtg	ctgagccaag	tgccaatgga	120
tggcaggaat	gcctacataa	cagggaaaaa	tctattgatg	caagcacggg	ggttccatat	180
tcttgggatg	atgatgttca	tctggtcac	tgcccatcag	tataagtgcc	catgttatcc	240
gcggcaatct	caggaaaaat	aaagcaggag	tggtcattca	ctgtaaccac	aggatcccat	300
ttggagactg	gtttgaatat	gtttcttccc	ctaactactt	agcagagctg	atgatctacg	360
tttccatggc	cgtcaccttt	gggttccaca	acttaacttg	gtggctagtg	gtgacaaatg	420
tcttctttaa	tcaggccctg	tctgcctttc	tcagccacca	attctacaaa	agcaaatgtg	480
tctcttacct	gaagcatagg	aaagctttcc	taccattttt	gttttaagtt	aacctcagtc	540
atgaagaatg	caaaccagg	gatggtttca	atgcctaagg	acagtgaagt	ctggagccca	600
aagtacagtt	tcagcaaagc	tggttgaaac	tctccattcc	atttctatac	cccacaagtt	660
ttcactgaat	gagcatggca	gtgccaetca	agaaaatgaa	tctccaaagt	atcttcaaag	720
aataaatact	aatggcagaa	aaaaaaaaaa	aaaaaaaaaa	aa		762

<210> 73

<211> 1103

<212> DNA

<213> Homo sapiens

<400> 73

gtcttaatga	gcaacagcaa	cagcagtcctc	cagttaagaa	agagagaatt	aaatacagca	60
gagatttcc	gttgaagctc	tcaagtgttt	ccatctgcag	aaaaaaacca	gactttctgc	120
ctgatcatcc	cattgtactg	caaaaaccag	aaaacaacca	aagttttaag	tagcatttta	180
agaacagatg	aatttaagtt	tggacatctg	caaagtgggt	ggatctagca	acaataactg	240
taatggactg	tgacaattca	atttattcct	aattttgatg	gttggctatt	tgacttctct	300
aaaaatgaga	aagagctatt	ttaaaatata	aagaattttc	taatcagttt	cagctttgca	360
ggagggtttc	tgcataaatt	gggaagtaac	actggaaagt	aggaatttgg	ttagtgaagt	420
gggaagactg	tatatattata	atttgcatac	tacttgcaat	tttttgtttt	tcatacttgg	480
taataatgga	atggaaatgt	aagctgtaaa	gactctcaaa	tataaaatat	ttgctacagt	540
gtatataatg	tacataattg	cttggttgctt	ttaaagttcc	ttctgttggt	ctgcttccca	600
ctgatttcat	accagctcat	gaatggatca	ttacagcttc	tccagaggct	tagaatgatt	660
cagaatgttc	aatgcatagt	tctcaataaa	caggaggcag	aatttttaat	gggtatttct	720
tttcagatat	atgattgggtc	tctagggtttt	tgataataat	atgggtcttaa	attcataatt	780
actagcagag	attgataatt	tggaaacaat	ggtagtgaat	gaaactgaag	ttgaaaaacg	840
gctgctactt	atgtcactaa	tcagaccata	tgaatagcag	aagttgagca	atttcaaagt	900
aaaactgata	tttttatttc	caaaggaatt	tagacatttg	aaaataattg	acatacatta	960
agttttaatt	cgataatttc	ttatatatgg	atgaacaatt	tttgggttta	agcttttaat	1020
tcctagaaat	tttatacatt	aaatctcctg	caatttgctc	ctctggatgt	tactgtttaa	1080
aaaaaaaaaa	aaaaaactcg	tag				1103

<210> 74

<211> 1633

<212> DNA

<213> Homo sapiens

<400> 74

ggcagcagca	tcagtaagta	ggagctaggg	aagagaaagc	atgcaaaagg	gcaagaatca	60
ggagaattga	tatagtagct	ggacagaact	ctagatgtgt	gtgtgtgaga	gaaagagagg	120
cagggagaag	gagggaggag	ttacccccac	gatgacctcc	aacttccctt	tctgcaccct	180
catcctgggg	atagcacagg	ctcaggccctg	ccctgggttg	cctggcgatt	ggcctggcct	240
gggctcaggg	gtgggggagg	ggctgcacca	cattaggacc	tgccgtactc	caatcccatg	300
cagtcctcct	gctcctgctg	ctgcgtgcct	gggctctggg	catgccaggc	ttccttgtgt	360
cctgcgtctg	tggccggttc	ctgccaaact	gtctagtctt	ttcaggcttg	aggccctgca	420
ttgctctttc	tggctcctct	cctcccttcc	cgtcccccac	ctagcctttt	ttgggttccg	480
ggatctgctg	acagactttc	ttcttgetgc	ctgcctgctt	acatttcaga	agaccctctt	540
ggaactgccc	atggctgtgg	tccacctgct	ggtagcaacg	ccctgttacc	aaatgctaga	600
taatctgcca	ctcccctctg	cagccgcca	ctggtgctga	gctgccacct	gttgtctgtt	660
tccacaccct	tgtacactgc	attctgcctg	tcactctgga	cagctgcccc	gcagctgcag	720
ctgaggccgt	cctgccagca	cctaccgcag	ccccatgggt	ggctcctgtc	agttcctggc	780

gctcccagcc	tgctcatct	gctgtactta	cagagccaca	tctggttgaa	tacagagctg	840
gggtagcctg	gatgggcccc	tgccacactc	actcccagag	aggcgggcat	cctctctctg	900
gacctctagg	gaagggcagg	gtctggagcc	caataataaa	acacagtaat	gataatcata	960
gctaattgtt	actgagaact	taggatgtga	taggetcaat	gatttaccag	aattactcta	1020
tactgcataa	ctaccctatc	aggttaagtac	tattaataatc	ccctttccca	catgaagaaa	1080
ctaaggctaa	ccaatagaaa	tgaacctgtg	taatgtccca	tgggcataat	tcattggagcc	1140
aggattcaga	accaggtgct	ttacttcagg	gctgaagctc	ataaccacta	gaccaagcgc	1200
cctcctccgt	gacctctggg	gaaggccag	caacatcctc	tattgcgtcc	aatgacttct	1260
ccctggctctg	agatccactg	actcacaggg	gtagggttaa	ggtaaggcc	agagctctcag	1320
ctaagctttg	gatactttct	tctggatttg	gagaaggctg	gaataactga	atttctgctc	1380
atcttcagga	gcggcctact	agagccacac	atttcccagc	tctccttggtg	tgtttcccag	1440
acccttcttc	catcgtgtcc	tctcccttag	gctcctggaa	agttttcaga	gagaatcacc	1500
cagtggtaac	attgttaaac	aaaacaggaa	aatgggactt	gtgtgtatat	atgattaaat	1560
tattaattga	tggtactacc	ttcttagctc	gtgccgaatt	cgatatcaag	cttatcgata	1620
ccgtcgacct	cga					1633

<210> 75

<211> 1384

<212> DNA

<213> Homo sapiens

<400> 75

ggcacgagca	gttattttca	aaatggctat	ggaaaacacg	taagttttta	aatatgccct	60
ctttctcggt	ttaaaaaatt	attactattg	tccatacatg	ttactctttt	catctagatt	120
taicatgttt	ctttggcctc	cagtctctgg	tgtttgccca	agctttatta	gagacaggtc	180
atttctacct	atgtgtcatt	ttatctatgt	cttgatctta	tgtaattcaa	ttgctcttta	240
agattatgtt	ctcttctcat	gtttgggtta	tccattatcc	aaattttcca	tttctttaac	300
ctgttatccc	ttgactcttt	acagttctac	ctttttatcc	acttagtctt	ttaccctttt	360
ttttattcgt	cacctctttt	tggtgtttca	ggtagctcct	acttatctcc	ttagcctttt	420
cttcttcac	ttctttctta	cttttctcct	acttctcatt	ttacataata	cttacttttt	480
gcttcagtct	tcaaccattg	tcaatcttgt	ttttccttat	attccatttt	actttctgaa	540
ctactcttta	atctcctgtt	caacactacc	tttccttctt	ttttatcccc	tcttattttac	600
acggtgatta	caacagtttg	gtatagtctg	atttatctga	ttgtaaaatt	gatgagttgg	660
atgtaccaa	aatataagga	agctaaattc	aaagaaggta	aaagatttgc	ttgtgtcacc	720
tagctgggtta	attttgccat	atgcattgtt	tctctacata	gtctatgtag	tcaaacaggt	780
ttcattttaga	aatcattccc	cataagaagg	gtttcaattt	gatttgaaca	ggcagagatg	840
gaaaaaattt	cctctctgat	aactactgct	actgttgtat	accagtagaa	atataacagc	900
agcacttagg	ttagaagaag	ctcattagct	attcagaata	aatttcattt	ttcttaattt	960
ttggtaatca	tatctcagcc	tggtgaattt	aacttaaaact	ctgaaagaat	tttggttgcc	1020
atttaatttt	taggtttcct	taatgatagg	gacctaaata	ttgtttttta	aaaaatttgtc	1080
ttggctggga	gcagtggctc	atgcctgtaa	tcccagcact	ttaggaagcc	aacattggag	1140
gattgcatga	gcccaggatt	tgcagaccag	cctgggcaac	acagtgaac	ctcatctcta	1200
caaaaagtta	aaaaattaac	caactgtggt	gccacatgcc	tgtagtccca	gctgcttggtg	1260
aggatgaggt	gagaggattt	cttgagtcca	ggagtttgag	gctgcagtga	gctatgatca	1320
cactcctgct	cttcagccta	ggtgacacag	caggacacta	tctttgaaaa	aaaaaaaaaa	1380
aaaa						1384

<210> 76

<211> 1715

<212> DNA

<213> Homo sapiens

<400> 76

ggcacgaggg	acattggagc	tccccacacc	actcattgct	gcccaccagc	tatacaacta	60
cgtaggtgat	cacgccagct	cttaccacat	gaagccattg	cgaatggccc	ggccaggggg	120
cccagaacac	aacgagtatg	ccctgggtgc	ggcatggcac	agttctggct	cctacctgga	180
ctctgagggg	cttcgacacc	aggatgactt	tgatgtgtct	ctgcttgtct	gtcactgtgc	240
tgcacccttt	gaggagcaag	gagaggctga	gcggcacgtt	ctgcggctac	agttcttcgt	300
ggtgctcacc	agccagcgag	agctcttccc	caggctcact	gctgacatgc	gccgcttcgg	360
gaagccaccc	agactgcccc	ctgagccaga	ggctcctggg	agttcagctg	gcagccctgg	420
ggagggcctca	gggcttatcc	tagcgccctgg	accggctcct	ctgttcccac	cactggctgc	480

agaggtgggc	atggcacgag	cacggctggc	tcagctggtg	cggctggctg	gagggcactg	540
ccgtcgggac	acccttttga	agcgcctctt	cttgcctggag	ccaccggggc	ctgatcgact	600
gcggctaggg	gggcgccctg	ccctggcaga	gctggaggaa	ctcctagaag	cagtcctatgc	660
caaatccatt	ggggacatcg	acccccagct	ggactgcttc	ctatccatga	cggctctcctg	720
gtaccagagc	ctgatcaaag	ttctcctaag	ccgcttcccc	agagctgtcg	ccatttccaa	780
agcccagact	tgggaactca	gtacctgggt	gcgctgaatc	agaagttcac	tgactgctct	840
gcgctagtgt	tctggactcc	acttaggaaa	gacgtctctg	aagtggtttt	ccgagaagcc	900
cttccagtag	agccccagga	cacgagaagc	ccccctgccc	aactggcttc	cacctaccac	960
cacctggagt	ctgtcatcaa	cacagcctgt	ttcacccttc	tggaccgcgc	tcctctgaag	1020
ggagtggact	ggaccactga	atgtcactgt	tccttgaatc	atgggcctac	cagattgcct	1080
gccagaggca	ggactgacca	gcccttcttg	gccccagggc	aagccagaca	ctgagtgaac	1140
ccaaaggcct	tgtaactatg	tcttgagggt	ctgctgcccc	agcctggcag	caggaaccgc	1200
cccccacaaa	cacccacagc	cactgaccca	tccaggactc	cagagagtca	ggtcaacccc	1260
gaggaccctt	tgggcccctt	tggggctact	ctttcggccc	ccctggtaga	gtctcgggag	1320
ttcacacagg	gtggcaaaca	ccccctagag	ctcctctgcc	tgaatcctgc	cccctagcct	1380
ttgaccactg	tcagccacct	gtgtcccttg	agccttcggg	tcttcacttc	ccacttggac	1440
atcactgctg	gacattccca	tcgagatgac	acctgggttc	caatcccagc	tctgcctttg	1500
aagcacttgc	ggccaccgtc	aagtccccct	gctctcggac	cctgggtttc	tcatecttta	1560
atgaggtggg	ttcagaagct	ctcccatctt	cacagcaacc	ctggcactgg	cttctcaatg	1620
ggagggaagt	cagcagagaa	actgaagtgt	tagacactat	gtgtcccacc	accccattac	1680
agagacatat	gacaatgaaa	aaaaaaaaaa	aaaaa			1715

<210> 77

<211> 1437

<212> DNA

<213> Homo sapiens

<400> 77

cgcccgacgc	cggaactgcg	agctctcagc	gggagccgag	acgggtgcagg	gccggagaag	60
caccttcaact	cccagcctgc	gccccgatgc	tgcgcgttct	gtgcctcctg	cgccccctgga	120
ggcccccttcg	ggcccgcggc	tgcgcttccg	acggggcggc	cgggggctca	gagatccaag	180
tgcgcgcctc	ggcgggtccg	gaccaaggga	tcactgagat	tctgatgaac	agaccttctg	240
cccgcaatgc	cttggggaat	gtcttcgtca	gtgagctgct	ggaaactctg	gcccagctgc	300
gggaggaccg	gcaagtgcgt	gtcctgctct	tcagaagtgg	agtgaagggc	gtgttctgtg	360
cagggtgcaga	cctgaaggag	cgggaaacaga	tgagtgaagc	agaggtgggg	gtgtttgtcc	420
agcgactccg	gggcctgatg	aatgacatcg	cagccttccc	tgcacccacc	attgcggcta	480
tggatgggtt	tgccttgggc	ggaggcctag	agccttgccc	ggcctgtgac	ctccgagtg	540
cagcttcctc	ggcagtcctg	ggactgattg	agaccacgcg	agggtctcct	ccgggggcag	600
gagggactca	raggtgccc	cgttgtctgg	gggtggccct	ggcgaaggag	ctcatcttca	660
cgggccgacg	actgagtggg	actgaggccc	acgtactggg	gctgggtgaat	cacgctgtgg	720
cccagaacga	ggagggggac	gcccgcctacc	agcgggcacg	agcactggcc	caggagatcc	780
tgccccaggc	ccccattgcc	gtgcggctgg	gcaaagttagc	cattgaccga	ggaacggagg	840
tggacattgc	atctgggatg	gccattgaag	ggatgtgcta	tgcccagaat	attccaaccc	900
gggaccggct	agagggcatg	gcagccttca	gggagaagcg	gactcccaaa	ttgtgtggca	960
aatgaccccc	attttaacct	tcagcatggg	agatgcatgc	cctgaagagc	aggatccaga	1020
aggaagattt	gtggccagat	tgccttcac	atttcacctc	tccagacttc	catttcttca	1080
caaggatgat	gatggaaata	aaatgactgg	cgtgatgcct	ggaaccaagg	tgctgatcct	1140
accacctaact	gctaccttcc	ttagcttcac	cctggctaga	aataatcacg	agggttgggt	1200
ttgcttttga	aaatgcctgt	ctctctactt	gaatgataaa	gaattaaatt	agatctctct	1260
gagtccttgg	atcattggct	ctcagccctt	gacctctctc	agttatcagg	cactcattag	1320
agatgtcaga	agattttaag	atacccttag	tttcttcctg	tggacaacaa	gaggtataaa	1380
ataaactctg	gacatcggtt	gaaccagtgt	caggggtcag	actgcagatc	ccagtct	1437

<210> 78

<211> 776

<212> DNA

<213> Homo sapiens

<400> 78

ggcacgagct	gatttctatt	tttaggagct	acttggattt	gtatgtattt	tttctacgtg	60
aaaatatatg	tactcttcac	ttttgttcca	gtactataat	tgctcatgca	ctctttctcc	120

cctttgagaa	cattcagtga	aatacaactt	catcaaagat	ttgctcaaag	gagaagaatc	180
gcatgagtg	gaaaagtaga	tgctcgtagc	cagaacagaa	aagggttacac	atgatcatgg	240
cacagaagat	aggaggtttg	acttgggtggg	ccataatgtt	tattatcctt	tttgaataaa	300
cagggaccag	cagcagtttt	ctcaggataa	atgctctacc	ccacttctct	atgaacaggt	360
gtggggaggc	ttactttcca	ttttcatatt	tatacacctc	tctacaaaag	caatttttaa	420
tgaaggttag	tggaattgtt	aaaaatctga	gagggaaatga	tgactggagg	tgttttgggg	480
tttttttctg	tattcatttt	ttaatgagaa	aagttttaaa	tgtagtacag	gttagacca	540
actactacct	tactattata	ggacgattct	atgtttctgt	taaagtattc	aagtagcttt	600
ctctggggga	aaaagtacca	cttggacact	taaaggaatt	gggatttttg	tctactttgg	660
ataaggcagt	tgacttctta	agtaaaagca	atagtgtaaa	atgtcatttt	gtttggaatg	720
ttaagtgagc	aaataaaaaa	catgttgaaa	ttgtaaaaaa	aaaaaaaaaa	aaaaaa	776

<210> 79

<211> 1155

<212> DNA

<213> Homo sapiens

<400> 79

ccgggtcgc	ccacgcgtcc	ggtgagtga	ctctaggatg	ttcacatgat	gacaaaatca	60
cctaacaatg	tagacgcttc	agaacatata	ccctttgtta	atcgatgcat	caactgtatat	120
atgtgtgtat	atacacacat	atatgtacat	atatttaata	catttgtgta	tgtgtgtgta	180
tatatatata	tataacttct	tcattattta	tactctagac	ccagagcctc	ctagctggtc	240
tcacaaaattg	gactctcctc	tctctttgag	acagccttca	aatgatcggt	tttaaagtgc	300
taattaactc	ctcttctcaa	aatgcttcaa	tgccccacta	atctctaccg	aatcaaggaa	360
ttcagccata	ctgtcccaag	atatctttcc	ttggccagtt	ggagcctcat	ttcagctgct	420
ctgggtttat	ccctgtctct	ttctttccca	cttccaagcc	tgtgctcagc	ccacctctc	480
ttctggggat	gccccacacc	ccactctgcc	atatctgcca	aacctttcat	ctccccgtga	540
agctcttgac	accaaataca	gtttacttta	gaaaatgtat	tttttccact	ttctcaacta	600
aacttttctt	tgtgtgatct	gcttttccgc	tgccaaggca	catcgttttt	aattctctac	660
agcactgctc	atatcttgcc	cagtattata	gcttctacat	attgggtctg	cttcttattt	720
ttgagcacia	aaactaagcc	actccacttt	ctcttaccag	tgaatccagc	ttaaaaaac	780
tgtgagcaac	ctatcagtat	tttgttgaca	tgaactctat	agaaacctta	gtccctggat	840
cttcgactct	gcctcccctg	acatttatct	gctcccacaa	agcacgcagg	tgtgggaaga	900
gaagtggctg	ttttttgagg	tcacatttca	gccctgattc	atcctaattg	cttcaccctt	960
tttatccttt	ggscactgtg	tycctagaga	tgtgaattca	attccgcacc	attctctcct	1020
ttacaatgat	gccaatattc	tcaggctttt	aagactaaat	tttaaattac	gagaaaaatt	1080
gatcttcaaa	cttaagtttg	acctagaaag	aacaatctca	tgaactcaaa	aaaaaaaaaa	1140
aaaaaaaaaa	aaaaaa					1155

<210> 80

<211> 407

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (352)..(352)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (376)..(376)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (378)..(378)

<223> n equals a,t,g, or c

<400> 80

ctttctgggt	ttagggaagt	ggtggacaag	gcaggagaga	accacattca	tcttctcctc	60
------------	------------	------------	------------	------------	------------	----

ttgtgtttgt	cttctgtctt	tcaataacgt	ccatgaactg	tgaggtagt	gtcttggtg	120
agagataagt	awggctkggc	atkgattctt	ytgtkgtwac	ctcaagctgt	tttctagtcc	180
ccaagaacag	caytytcagt	gggtgtggaa	gtgggcggga	catgaagcaa	tggttttaca	240
ttgcattgcc	tggtctacags	ttggcatttc	tttccttttt	ctttttcttt	gcgtcattgc	300
cattggtgcc	actaattttg	cttccccctyt	cttttataaa	cttgtttcct	cnggagttgc	360
ctaagagtcc	tgcatnanaa	cctaattggg	aatgaagcag	tgtgttc		407

<210> 81

<211> 711

<212> DNA

<213> Homo sapiens

<400> 81

ggcacgagcg	aagaccctgt	tcggaccctg	ccccgattcc	agactcaggt	agatcgtcgg	60
cataccctct	accgtggaca	ccaggcagcc	ctggggctga	tgagagaga	tcaggatcc	120
cccagggagt	aggggctacc	ttgaggggat	gatagacctc	ccccactccc	agtgkkactc	180
tggaatatg	aaggaactag	ggagtggaa	agatttcaga	gctggggaga	ggagttctc	240
ccttcaaagc	cagcaactgc	ctttggggaa	tgctgggggg	tctctccttt	ctcctgcttg	300
tgtkargtgg	tacacagtcc	ccccttcacc	tgggcggaag	ctgtcccga	cagactcatc	360
tcagctttcc	cttggggcag	gatcgggggc	agcagctcca	gcagaaacag	caggatctgg	420
agcaggaagg	cctcgaggcc	acacaggggc	tgctggccgg	cgagtgggcc	ccaccctct	480
ggragctggg	cagcctcttc	caggccttcg	tgaagaggga	gagccaggct	tatgcgtaag	540
cttcatagct	tctgtggcc	tggggtggac	ccaggacccc	tggggcctgg	gtgccctgag	600
tggtggtaaa	gtggagcaat	cccttcacgc	tccttggcca	tgttctgagc	ggccagcttg	660
gcctttgcct	taataaatgt	gctttatctt	caaaaaaaaa	aaaaaaaaac	t	711

<210> 82

<211> 2152

<212> DNA

<213> Homo sapiens

<400> 82

ccgctttgtt	ctccagatgt	gaatagctcc	actataccag	cctcgtcttc	cttccggggg	60
acaacgtggg	tcagggcaca	gagagatatt	taatgtcacc	ctcttggggc	tttcatggga	120
ctccctctgc	cacatttttt	ggaggttggg	aaagttgcta	gaggcttcag	aactccagcc	180
taatggatcc	caaacctggg	agaatggctg	cgctccctgt	ggctgtgctg	ctgctgctgc	240
tgctggagcg	cggcatgttc	tcctcaccct	ccccgcccc	ggcgtgttta	gagaaagtct	300
tccagtacat	tgacctccat	caggatgaat	ttgtgcagac	gctgaaggag	tggttgccca	360
tcgagagcga	ctctgtccag	cctgtgcctc	gcttcagaca	agagctcttc	agaatgatgg	420
ccgtggctgc	ggacacgctg	cagcgccctg	gggcccggtg	ggcctcgggt	gacatgggtc	480
ctcagcagct	gccccgatgg	cagagtcttc	caatacctcc	cgctcatcct	gccgaactgg	540
ggagcgatcc	cacgaaaggc	accgtgtgct	tctacggcca	cttggacgtg	cagcctgctg	600
accggggcga	tggttggtct	acggacccct	atgtgctgac	ggaggtagac	gggaaacttt	660
atggacgagg	agcgaccgac	aacaaaggcc	ctgtcttgcc	ttggatcaat	gctgtgagcg	720
ccttcagagc	cctggagcaa	gatcttcctg	tgaatatcaa	attcatcatt	gaggggatgg	780
aagaggctgg	ctctgttgcc	ctggaggaac	ttgtggaaaa	agaaaaggac	cgattcttct	840
ctggtgtgga	ctacatgtga	atttcagata	acctgtggat	cagccaaagg	aagccagcaa	900
tcacttatgg	aacccggggg	aacagctact	tcatggtgga	ggtgaaatgc	agagaccagg	960
attttctact	aggaaccttt	ggtggcatcc	ttcatgaacc	aatggctgat	ctggttgctc	1020
ttctcgttag	cctggtagac	tcgtctggtc	atatacctgt	ccctggaatc	tatgatgaag	1080
tggttctctt	tacagaagag	gaaataaata	catacaaagc	catccatcta	gacctagaag	1140
aataccggaa	tagcagccgg	gttgagaaat	ttctgttcga	tactaaggag	gagattctaa	1200
tgcacctctg	gaggtaccga	tctctttcta	ttcatgggat	cgagggcgcg	tttgatgagc	1260
ctggaactaa	aacagtcata	cctggccgag	ttataggaaa	atthttcaatc	cgtctagtcc	1320
ctcacatgaa	tgtgtctgcg	gtggaaaaac	aggtgacacg	acatcttgaa	gatgtgttct	1380
ccaaaagaaa	tagttccaac	aagatggttg	tttccatgac	tctaggacta	caccctggga	1440
ttgcaaatat	tgatgacacc	cagtatctcg	cagcaaaaag	agcgatcaga	acagtgtttg	1500
gaacagaacc	agatatgatc	cgggatggat	ccaccattcc	aattggccaa	atgttccagg	1560
agatcgtcca	caagagcgtg	gtgctaattc	cgctgggagc	tgttgatgat	ggagaacatt	1620
cgcagaatga	gaaaatcaac	aggtggaact	acatagaggg	aaccaaatta	tttgctgcct	1680
ttttcttaga	gatggcccag	ctccattaat	cacaagaacc	ttctagtctg	atctgatcca	1740

```

ctgacagatt cacctcccc acatccctag acagggatgg aatgtaaata tccagagaat 1800
ttgggtctag tatagtacat tttcccttcc attttaaatag tcttgggata tctggatcag 1860
taataaaaata tttcaaaggc acagatgttg gaaatgggtt aaggtcccc actgcacacc 1920
ttcctcaagt catagctgct tgcagcaact tgatttcccc aagtcctgtg caatagcccc 1980
aggattggat tccttccaac ctttttagcat atctccaacc ttgcaatttg attggcataa 2040
tcaactccgt ttgctttcta ggtcctcaag tgctcgtgac acataatcat tccatccaat 2100
gatcgcttt gctttaccay tctttccttt tatcttatta ataaaaatgt tg 2152

```

<210> 83

<211> 1555

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1248)..(1248)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1389)..(1389)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1391)..(1391)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1393)..(1393)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1396)..(1396)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1551)..(1551)

<223> n equals a,t,g, or c

<400> 83

```

ggcagcagct gggcagatgc aaaatctgga gagcgcgagg gccgggagggt cagtcagcac 60
ccagactggc agcatgaccg gtcagatacc aaggctttct aaagtcaacc ttttcaactct 120
gctcagcctc tggatggagc tctttccagc agaagcccag cggcaaaaat ctcagaaaaa 180
tgaagaggga aagcatggac ccttaggaga taatgaagag aggaccagag tatctactga 240
caaaagacag gattactggg agcagctaag atgcctarat gaaagggtta ccatcactgc 300
tggttaggaa atggattatg agaactcgaa cagagggaag gtgaaatgca accggaggaa 360
acactctgat atgagggttg aggccttcaa aattgctttg cagcataagc cacagtgaat 420
caggagtacc agggagtgga tagaatgttt atttggttaa ctgagacttt ttagttcatc 480
aattattttg aagggtagaa cactctgttg gctctctttc tatttccttc tgggtacaat 540
cacaataaaa aaatctctcc tagctgaaat tacatgcagt actagcaaag ggtctctttg 600
ttataaaactg ttcattaatt gacgaacatt tgtgtactta actatgtata aggcattctca 660
tcgttcaatt tcaaatacaa attaaaatat tttttcacat ttgttatcct gttatgtttt 720
ctcttttaca aattgtctgt tcgtatcttt ttgtctctct ttaggcctta ttcttgtaaa 780
ttcatatgtg ctctaataaa ttgaaatatt ttctgtatat taaacattac taacctttcc 840
tctgtcacac tgattgaaaa atgatctatt tagtttggtt ttttgtcttt aattttgtaa 900
gcttttaaaa gttaatatgt cccttcagac accatcccaa catcacataa gaattttttc 960
atgttataaa ttcttttggtg acatatttga taactgtttt attatgagga ggaccataat 1020

```

taattcaacc	attcccttat	tttggtcatt	taggtttttg	ggtttgggtt	ttttgtttgt	1080
ttaacgtctt	tgcttgctat	tttaaagaat	gctgcactaa	atgtgaatgc	ttgagatttc	1140
ttctctgtat	ttagaatatt	ttcctagaat	ggattctcag	aagaattctc	agtctgtgga	1200
gaggaacatt	tttaatgcat	ggaagagctg	gagtgaaccg	aatttcanac	tgccctgctg	1260
atccagaaat	aagtttgctt	acggaggctt	ctagttctga	agatgcaaag	ttagatgcca	1320
aagcagtgga	aagattgaag	tcaaacagtc	gggcccatgt	gtgtgtctta	cttcaacctt	1380
tggtgtgtna	nanggnacag	ttttagagag	agacctctta	caaatgtgac	tttattcaaa	1440
aaattacaata	aacattgccc	gatgctaaca	ctgactttta	ttatgaatgt	aaacaagaaa	1500
gaataaaaaga	atatgaaatg	ttaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	naaaa	1555

<210> 84

<211> 1532

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1412)..(1412)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1433)..(1433)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1446)..(1446)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1505)..(1505)

<223> n equals a,t,g, or c

<400> 84

gctggagcgg	tttcattgcc	tacattccgc	attggaaaat	agaagcaggc	acaatgaagg	60
gaaaaggccg	aggcatcagc	gtgtgaagac	cgcaaagacg	atcccagagta	cagttgtgaa	120
cagcattgct	gctaggctcc	tcctgcagat	catctgaaat	gaacctctct	tattgatttt	180
tattggccta	gagccaggag	tactgcattc	agtgtacttt	caggggtaaaa	agaaaacagt	240
cctgggtgtt	gtcatcataa	acatatggac	cagtgtgatg	gtgaaatgag	atgaggctcc	300
gcaatggaac	tgtagccact	gctttagcat	ttatcacttc	cttccttact	ttgtcttggg	360
atactacatg	gcaaaatggg	aaaggtaagg	aaaatgactc	ggaaaatgtg	catgaaatgt	420
actagggttt	ttgcttgggt	aagggtgccta	aatgcttagg	tcaaataccc	tggcaatctg	480
catgttacat	gctatctgct	ggcagtttct	ttctgatata	aaaatgaaac	agtattcttg	540
gacagaggac	acagaatttc	taattccagt	ggggcttggg	ttgctttcag	tttcttataa	600
ttgtacttgg	agaaacagat	actgatcagt	gttttatatt	ctaaaagaca	gccaagttga	660
ataataaaga	ctttcgtttt	ggcattttgt	tctttttact	aaacataatt	aagtgtttta	720
taagcttcct	tgtaccgagt	gttgcataaa	acacttaaaa	ggacacaatt	agtgccttcg	780
tgagatttac	atgctaatta	tgctaaygat	tgggtgctat	gtagttaatg	atttaaactg	840
catgcattga	cagattactc	cttaggcaaa	agtatttaag	aagggataag	tagaaattct	900
gattggaata	ttaaaacatt	ttttaaaaat	taattatgkt	tagactgktg	aaccgkgtta	960
tataatttta	ggataawgga	ttwatttgct	tttttttttt	ttaagagaaa	ctacttgaag	1020
taaattccta	cccatacttc	ttacttgtct	cctttccctt	gattaatcta	aggaatgktg	1080
atgatgagaa	gaaagatgga	aatgttgagg	tggttgcata	tttggtttgt	tagaatatct	1140
gtcatcacct	gggctwtttg	aagctgctgt	tgctgatgtt	gttttattga	ctcatgaaga	1200
caactgaaaa	gattgctttg	taaccttatt	tttttctgat	gtgtgtttac	atccatgtct	1260
atatatacat	attgcatatg	tatatatctg	tatgtgcatg	tatatgttaa	aaatctgata	1320
taagtgaata	catgctctgt	gctttgaaac	aaaaaaaaaa	aaaaaaaaact	cgaggggggg	1380
cccgggtacc	aattgcacct	atagtgaagc	gnattacaat	tcactggccg	cgntttacaa	1440

cgtcgngact gggaaaaccc tggcggttacc caacttaatc gccttgacagc acatccccct 1500
 ttcgncagct ggcgtaatat cgaagaggcc cg 1532

<210> 85
 <211> 1559
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (1445)..(1445)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (1551)..(1551)
 <223> n equals a,t,g, or c

<400> 85
 atccagcagt ggggagacag cgtgctgggc aggcgctgcc gagaccttct cctgcagctc 60
 tacctacagc ggccggagct gcgggtgccc gtgcctgagg tcctactgca cagcgaaggg 120
 gctgccagca gcagcgtctg caagctggac ggactcatcc accgcttcat cacgctcctt 180
 gcggacacca gcgactcccg ggcgttggag aaccgagggg cggatgccag catggcctgc 240
 cggaagctgg cgggtggcga cccgctgctg ctgctcaggc acctgcccac gatcgcggcg 300
 ctctgcacg gccgcaccca cctcaacttc caggagttcc ggcagcagaa ccacctgagc 360
 tgcttctcgc acgtgctggg cctgctggag ctgctgcagc cgcacgtgtt ccgcagcgag 420
 caccaggggg cgctgtggga ctgccttctg tccttcaccc gcctgctgct gaattacagg 480
 aagtcctccc gccatctggc tgccttcac aacaagtttg tgcagttcat ccataagtac 540
 attacctaca atgccccagc agccatctcc ttctgcaga agcacgccga cccgctccac 600
 gacctgtcct tcgacaacag tgacctgggt atgctgaaat ccctccttgc agggctcagc 660
 ctgccacagca gggacgacag gaccgaccga ggcttgagc aagagggcga ggaggagagc 720
 tcagccggct ccttgccccct ggtcagcgtc tcctgttca cccctctgac cgcggccgag 780
 atggccccct acatgaaacg gctttcccg ggccaaacgg tggaggatct gctggagggt 840
 ctgagtgaca tagacgagat gtcccggcgg agaccgcaga tcctgagctt cttctcgacc 900
 aacctgcagc ggctgatgag ctgcggccgag gagtgttgcc gcaacctcgc cttcagcctg 960
 gccctgcgct ccatgcagaa cagccccagc attgcagccg ctttccctgcc cacgttcatg 1020
 tactgctctg gcagccagga ctttgagggt gtgcagacgg ccctccggaa cctgcctgag 1080
 tacgctctcc tgtgccaaag gcacgcggct gtgctgctcc accgggcctt cctggtgggc 1140
 atgtacggcc agatggaccc cagcgcgcag atctccgagg ccctgaggat cctgcatatg 1200
 gaggccgtga tgtgagcctg tggcagccga cccccctcca agccccggcc cgtcccgtcc 1260
 ccggggatcc tcgaggcaaa gccaggaag cgtgggcgtt gctggtctgt ccgaggaggt 1320
 gagggcgccg agccctgagg ccaggcaggc ccaggagcaa tactccgagc cctggggtgg 1380
 ctccgggccc gccgctggca tcaggggccg tccagcaagc cctcattcac cttctgggcc 1440
 acagncctgc gcggagcggc ggatccccc gggcatggcc tgggctgggt ttgaatgaaa 1500
 cgacctgaac tgtcaaaaaa aaaaaaaaaa aaacccgrrg gggggcccg nacccaatt 1559

<210> 86
 <211> 1231
 <212> DNA
 <213> Homo sapiens

<400> 86
 ggacagagt aatgtcgagg agttccagga tctctggcct cagttgtcct tggttattga 60
 tgggggacaa attggggatg gccagagccc cgagtgtcgc cttggctcaa ctgtggttga 120
 tttgtctgtg cccggaaagt ttggcatcat tcgtccaggc tgtgccctgg aaagtactac 180
 agccatcctc caacagaagt acggactgct cccctcacat gcgtcctacc tgtgaaactc 240
 tgggaagcag gaaggcccaa gacctggtgc tggatactat gtgtctgtcc actgacgact 300
 gtcaaggcct catttgcaga ggccaccgga gctagggcac tagcctgact ttttaaggcag 360
 tgtgtcttct tgagcactgt agaccaagcc cttggagctg ctggtttagc cttgcacctg 420
 gggaaaggat gtattttatt gtattttcat atatcagcca aaagctgaat ggaaaagtta 480
 agaacattcc taggtggcct tattctaata agtttcttct gtctgttttg tttttcaatt 540

gaaaagtaat	taaataacag	attagaatct	agtgagagcc	tcctctctgg	tgggtgggtgg	600
cattttaaggt	caaaccagcc	agaagtgtcg	gtgctgttta	aaaagtctca	ggtggctgcg	660
tgtgggtggct	catgcctgta	atcccaacat	tctgggaggc	ccaggcggga	gaactgcttg	720
agccccagga	gttcagaatc	agcctgggca	acatagcaat	actccgtctc	ataaaaatta	780
ataaaataaaa	agtctcaggt	gaccaaaggc	tcctgaagct	agaaccaggt	ttggataaag	840
attgaagagc	cacaggccac	tcttccctct	gagccattgg	gcctagtggg	gtcatgtatt	900
gtaattgtct	gcagggagag	cagtcttttt	ggtgtaatag	tgggatgtct	gcttagttgg	960
caggggttca	gtccaaatgg	aagaatattg	ggaaataaac	ctccactatc	ctttatagcc	1020
agggactttt	ttcctattta	ttcataaaat	aaattatagt	taattatacc	cataacacct	1080
ttattttaaat	ccagtgttct	ccgcagcctt	ttgtctatct	atatgtgtac	caagtgttaa	1140
acataattat	tattgggcat	ttgaactttg	tttttcttta	aagaaatgct	gctattaaac	1200
atattttgtaa	atggaaaaaa	aaaaaaaaaa	a			1231

<210> 87

<211> 1189

<212> DNA

<213> Homo sapiens

<400> 87

gcgtccgctg	ggctggaaca	gcacagaacc	cacagggctg	ccgtccacac	tctcccggtc	60
agagtcctgg	gaccacatgg	ggacgctgcc	atggcttctt	gccttcttca	ttctgggtct	120
ccaggccttg	gatactccca	ccatcgtctc	ccgcaaggag	tggggggcaa	gaccgctcgc	180
ctgcagggcc	ctgctgacct	tgctgtggc	ctacatcatc	acagaccagc	tcccagggat	240
gcagtgccag	cagcagagcg	tttgagccca	gatgctgcgg	gggttgagct	cccattccgt	300
ctacaccata	ggctgggtgc	acgtggcgta	caacttcctg	gttggggatg	atggcagggt	360
glatgaaggt	gttggctgga	acatccaagg	cttgacacac	cagggctaca	acaacatttc	420
cctgggcata	gccttctttg	gcaataagat	aagcagcagt	cccagccctg	ctgccttctc	480
agctgcagag	ggtctgatct	cctatgccat	ccagaagggt	cacctgtcgc	ccaggatatat	540
tcagccactt	cttctgaaag	aagagacctg	cctggaccct	caacatccag	tgatgccccag	600
gaaggtttgc	cccaacatca	tcaaacgatc	tgcttgggaa	gccagagaga	cacactgccc	660
taaaatgaac	ctcccagcca	aatatgtcat	catcatccac	accgctggca	caagctgcac	720
tgtatccaca	gactgccaga	ctgtcgtccg	aaacatacac	tcctttcaca	tggacacacg	780
gaacttttgt	gacattggat	atcaataagg	ccaggcgtgg	cggcgattac	gtctgtaate	840
ccaggacttt	gggaggccaa	ggcgggcaga	tcacttcagg	ccaggaattc	aagagcagcc	900
tggccaatat	ggcgaaactc	tgtctctact	gaaaacaaac	aaacaaacaa	acaaacaaac	960
aaagaacaaa	caaaaattag	ccgggtgtgg	tggcacacgc	ctgtagtccc	agctactcag	1020
gaggctgagg	cataagaatt	gcttgaaccc	tggaggcgga	ggttgcagtg	agctgagatt	1080
gggccaccgc	actccagttc	gggagacaga	gtgagactgt	ctcaaaacaa	caacaaaaaa	1140
atccctaaca	taatctcaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa		1189

<210> 88

<211> 496

<212> DNA

<213> Homo sapiens

<400> 88

tcgaccacag	cgtccgaact	gacacaatga	aactgtcagg	catgtttctg	ctcctctctc	60
tggctctttt	ctgcttttta	acaggtgtct	tcagtcaggg	aggacagggt	gactgtgggtg	120
agttccagga	caccaagggtc	tactgcactc	gggaatctaa	cccacactgt	ggctctgatg	180
gccagacata	tggcaataaaa	tgtgccttct	gtaaggccat	agtgaagaag	ggtggaaaga	240
ttagcctaaa	gcacccctgga	aaatgctgag	ttaaagccaa	tgtttcttgg	tgacttgcca	300
gcttttgcag	ccttcttttc	tcacttctgc	ttatactttt	gctgggtggat	tcctttaatt	360
cataaagaca	tacttactct	gcctgggtct	tgaggagttc	aatgtatgtc	tatttctctt	420
gattcacttg	tcaataaagt	acattctgca	aaagcaaaaa	aaaaaaaaaa	aaaaaaaaaa	480
aaaaaaaaaa	aaaaaa					496

<210> 89

<211> 3153

<212> DNA

<213> Homo sapiens

<220>
 <221> misc_feature
 <222> (1)..(1)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (2584)..(2584)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (2590)..(2590)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (3153)..(3153)
 <223> n equals a,t,g, or c

<400> 89
 nggccgtggg tgtacgcggc gcagcgcggc agtcctgatg gcccgcatg gggtaccgct 60
 gctgccctct ctgtcgctcc tggtcggcgc gtggctcaag ctaggaaatg gacaggctac 120
 tagcatggtc caactgcagg gtgggagatt cctgatggga acaaattctc cagacagcag 180
 agatgggtgaa gggcctgtgc gggaggcgac agtgaaaccc ttggccatcg acatatttcc 240
 tgtcaccaac aaagatttca gggattttgt cagggagaaa aagtatcgga cagaagctga 300
 gatgtttgga tggagctttg tctttgagga ctttgtctct gatgagctga gaaacaaagc 360
 caccagacca atgaagtctg tactctgggt gcttccagt gaaaaggcat ttggaggga 420
 gcctgcaggc cctggtctct gcacccgaga gagactggag caccagtggt tacacgtgag 480
 ctggaatgac gcccgctgct actgtgcttg gcggggaaaa cgactgcca cggaggaga 540
 gtgggagttt gccgcccag ggggcttgaa ggggtcaagt taccatggg ggaactgggt 600
 ccagccaaac cgaccaaac tgtggcagg aaagttcccc aaggagaca aagctgagga 660
 tggcttccat ggagcttccc cagtgaatgc ttccccgcc cagaacaact acgggctcta 720
 tgacctcctg gggaacgtgt gggagtggac agcatcacg taccaggctg ctgagcagga 780
 catgcgcgtc ctccggggg catcctggat cgacacagct gatggctctg ccaatcacgg 840
 ggcccggtc accaccagga tgggcaacac tccagattca gcctcagaca acctcggttt 900
 ccgctgtgct gcagacgcag gccggccgcc aggggagctg taagcagccg ggtggtgaca 960
 aggagaaaag ccttctaggg tcaactgtcat tccctggcca tgttgcaaac agcgcaattc 1020
 caagctcgag agcttcagcc tcaggaaaga acttccccct cctgtctctc catccctctg 1080
 tggcaggcgc ctctaccag ggcaggagag gactcagcct cctgtgtttt ggagaagggg 1140
 cccaatgtgt tttagcagat gctggggggc aggtgtttct gttagaggcc aagtattatt 1200
 gacacaggat tgcaaacaca caaacaattg gaacagagca ctctgaaagg ccatttttta 1260
 agcattttta aatctattct ctccccctt ctccctggat gattcaggaa gctgacattg 1320
 tttcctcaag gcagaatttt cctgggtctg ttttctcagc cagttgtctg ggaaggagaa 1380
 tgctttcttt gtggcctcat ctgtggtttc gtgtccctct gaaggaaact agtttccact 1440
 gtgtaacagg cagacatgta actattttaa gcacagttca gtccataaag ggtctgggag 1500
 aaccagatga tgtactaggt gaagcattgc attgtgggaa tcacaaagca aatagtactc 1560
 cagaaagaca aatatcagaa gcttccattt cttttttttt tttttttttt tttagacag 1620
 ggtctttctc tgttgcccag gctagagtgc actggtgatc acggctcact ctagccttga 1680
 attcctgggc ccaagcaatt ctcccacctc agcctcctga gtagctggga ctacaagtgt 1740
 gcaccaccat gcctggctaa ttttttgaat tttttagatg atgggatctc gctctgttgc 1800
 ccagggtggt ctgcaactcc tggcctcaag cgatcctccc acctcgacct cccaaagtgc 1860
 tgggtattaca ggtgtgagcc acctgcctg ggcctcttc tccatagcc tccaaaaaca 1920
 tgtccctgga gtagtcctg ctcccacact gtcactggat gtcattgggg caataaaatc 1980
 tcctgcaatt gtgtatctca gacatttgtg tctttgatcc tcacctgtg accctaaagg 2040
 gaagaaagcc tgagtgtcaa gtaactctgg gccctccccta aagagaaatg gagatggtgg 2100
 ctcactcagg aagtagagga gcagggggtt cctgggtctc agggccacgtg tgatctctgc 2160
 ccaccagggt cctgccccag cctgcaggta ttgctgtgtg gtgggaacac ccacttcctc 2220
 tgtgcacagc ctttgagagg ggtcgtggc ctcagttcca ggggttctg gccaggcca 2280
 agtgcctcct ctgcagagc ctgcacgcac ctacccctt tgacttgtat ttccatggct 2340
 tcccctcccc acctgcccc tagccctccc tgactggcca gccctcagt agtcctctc 2400

```

ggccagggag aggagcacgg ccttgggtgt gttctcgaaa agggctgccc ggttctgctg 2460
ctgccccctt ttcacccagt ggccatagat tcggaaagcg taggcgtcga tgagccggcg 2520
cagaggccgg agggcatagg ggtctcggat gacgatctcc cgggtcacag gcttcacccg 2580
gcgntactgn tagtagatcc gcaactgaagc cagcacggtc agagcgatca ccttgaactt 2640
cccccggggg ctgaagtgcc gcaacttcctc taccaagtac tgctggaaga aggggtgtgc 2700
caaggcctct tccgctgtgt agcggttctg gggttgcacc accaggaatc gggagaccag 2760
gtccttcacg gtgtccgagt aatcatccca ctccggcgag ccaaactggg agttgccgct 2820
catgatcatc ctacagcatc gcatctgctt ccggtgccag aagggcgggg agccggccag 2880
cagcgtgtac atgatgacgc cagtgtctca catgtccacc tctttcccg agccggggtg 2940
gtcctcattc atggagcact cgataatctc agggggccag taactggggg tcccgcagac 3000
ctctcgcagc ctctctcccc gctccagctg gcagggaaa ccaaagtctg tgagcttgat 3060
gttcatgttg tcattccaaga gaatgttctc gggcttcagg tcccggtgca cgatgttgag 3120
tttgtgcaag gtgcagatca cctccagcag agn 3153

```

<210> 90

<211> 2496

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (2340)..(2340)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (2373)..(2373)

<223> n equals a,t,g, or c

<400> 90

```

ggccttacct actagcggaa tcgactgaag agacgcctgc cagtgcggga ggtaggaagc 60
tcgatcccca aagaaaagag cgagtgggca ggcagctgcg agacagaacc ggagtgtgca 120
gggtccctag aggcgggttc ctggtctgtg ctgctctcct ggaagccatg gtacaggcag 180
agctcagggc gatccccagg tgagggcagc ggctctgctt gggattccac cgcagtacaa 240
ccgggtagat gcggggtgga gaagaaagga tgttgctgc actgctgcgc aatagcacc 300
tgagaggcta catattgcaga agcagcagca gcagaagaca cagcgccggt ccaggaggcg 360
gctcgagctg ttcgtaaagt cgcccgacag cttttctcc gtagtatgag agttgacaaa 420
acagccagag aacagggttc cccattacaa tcttttcgag atcttttccc ttgctaaccg 480
gatctgattt gtgcgaaac atgccttgca ctgtaccctg gaggaactgg agacagtggg 540
ttcgaccttt agtagcggtc atctacctgg tgtcaatagt ggttgcgggt cccctatgag 600
tgtgggaatt acagaaactg gaggttgga tacacaccaa ggcttggttt attgctggaa 660
tctttttgct gttgactatt cctatatcac tgtgggtgat attgcaacac ttagtgatt 720
atacacaacc tgaactacaa aaaccaataa taaggattct ttggatggta cctatttaca 780
gtttagatag ttggatagct ttgaaatata ccggaattgc aatatatgtg gatacctgca 840
gagaatgcta tgaagcttat gtaatttaca actttatggg attccttacc aattatctaa 900
ctaaccggta tccaaatctg gtattaatcc ttgaagccaa agatcaacag aaacatttcc 960
ctcctttatg ttgctgtcca ccatgggcta tgggagaagt attgctgttt aggtgcaaac 1020
taggtgtatt acagtacaca gttgtcagac ctttcaccac catcgttgct ttaatctgtg 1080
agctgcttgg tatatatgac gaagggaact ttagcttttc aaatgcttgg acttatttgg 1140
ttataataaa caacatgtca cagttgtttg ccatgtattg tctcctgctc ttttataaag 1200
tactaaaaga agaactgagc ccaatccaac ctgttggaac atttctttgt gtaaagctgg 1260
tggtttttgt ttctttttgg caagcagtag ttattgcttt gttggtaaaa gttggcggtt 1320
tttctgaaaa ccatcgtgg gaattggcaaa ctgtagaagc tgtggccacc ggactccagg 1380
attttattat ctgtattgag atgttcctcg ctgccattgc tcatcattac acattctcat 1440
ataaaccata tgtccaagaa gcagaagagg gctcatgctt tgattccttt cttgccatgt 1500
gggatgtctc agatattaga gatgatattt ctgaacaagt aaggcatgtt ggacggacag 1560
tcaggggaca tcccaggaaa aaattgtttc ccgaggatca agatcaaaat gaacatacaa 1620
gtttattatc atcatcatca caagatgcaa ttttcattgc ttcttctatg ccaccttcac 1680
ccatgggtca ctaccaaagg tttggacaca ctgtgactcc ccagactaca cctaccacag 1740
ctaagatata tgatgaaatc cttagtata ctataggaga gaaaaaagaa ctttcagata 1800
aatccgtgga ttcctgaaca gtatggaaaa gcaaactgtg caactactac attatatcat 1860

```

tacctggtat	cccatggatt	ttgtgcttgg	gacagacat	aatgatgga	aatgtcaac	1920
acaaaaatag	ctgaaagcca	ggtacaacta	ctgcatttat	atatgtaagt	tttgtatatc	1980
aaaaataatt	ggtctaaatt	tcttagactt	agacttgatt	tcttaacatt	agggtatcgc	2040
atactcaaat	ggtagacaat	gaccccaact	aaatcttcct	gatgttacac	tgctttatca	2100
agaggatgga	cttttttttt	ttgaggcaga	cagagtcttg	gctctgtcac	ccaggctgga	2160
gtgcagtggc	gcaatctcgg	gtcactgcaa	gctctgcctc	ccaagtccat	gccattctcc	2220
tgccctcagcc	tcccaagtag	ctgcgactac	aagcacctgc	caccatgccc	agctaatttt	2280
ttttttcagt	agagacaggg	tctcaccatg	ttagccacga	tgctcttgat	ctgaccttgn	2340
gatcccgcga	cctcggcctt	ccaaagtgt	ggnaatacag	gcgtgagcca	ctgggccttg	2400
ccaagattgg	gcacttttta	acatcagaac	ttcctatcac	tgctgcattg	agttgtctccg	2460
catttattag	aagcattatg	cctgtacgga	ttgggg			2496

<210> 91

<211> 1001

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (919)..(919)

<223> n equals a,t,g, or c

<400> 91

cgcgctgga	ccctgtggcg	gcggccatgg	ccatatggcg	ctgcccgcct	ggctgcagcc	60
aggatagga	agaatgcgta	tcttttcac	tattacttaa	tccagttctg	tgggccactct	120
tggaatttta	caaatatgac	agtcagattc	ttttcatttg	gaaaaggtaa	aactccgaaa	180
cagttttttt	atttttaact	tttaatcctt	gttttcacct	catcctgctt	atattaaatt	240
tctacacacc	tcaaccttct	accacgggat	acagattcaa	tggttgacac	tttttatgct	300
attggacttg	tgatgcgact	ttgccaatcc	gtatctctcc	tggaactgct	gcacatatat	360
gttggcattg	agtcaaacca	tcttctccca	aggtttttgc	agctcacaga	aagaataatc	420
atcctttttg	tggtgatcac	cagtcaagag	gaagtccaag	agaaatatgt	ggtgtgtgtt	480
ttattcgtct	tttggaaatc	attggatatg	gttaggtaca	cttatagcat	gttatcagtc	540
ataggaatat	cctatgctgt	cttgacatgg	ctcagtcaaa	cactatggat	gccaatttat	600
cctttgtgtg	ttcttgtctg	agcatttgcc	atctatcaat	cgctgcctta	ttttgaatca	660
tttggcactt	attccaccaa	gctgcccttt	gacttatcca	tctatttccc	atatgtgctg	720
aaaatatatc	tcatgatgct	ctttataggt	atgtattttt	cctacagtca	tctatactca	780
gaaagaagag	acatcctcgg	aatctttccc	attaaaaaaa	agaagatgtg	aagtacagca	840
ttccagtgtg	acacagagaa	agacaggctg	tggattcagt	gcagtaaata	aaacacagga	900
agtattcttg	tggaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaraaaaaaa	aaawaaaaaa	960
aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	a		1001

<210> 92

<211> 1142

<212> DNA

<213> Homo sapiens

<400> 92

gaagaagtga	cacttcttgg	tcagaatggt	aatagttttc	gggacaattc	ggagggtccag	60
ttcaacagtg	cagtgcctac	caatctcagt	cgtggcttta	ccaccaacta	taaaaccaag	120
caaggaggac	ttcgttttgc	tcactctctg	gatcagggtc	ccagagtaga	tcctgaaatg	180
aggatccgtt	ttacctctcc	ccacccaag	gattttcctg	atgaggttct	gcagctgatt	240
catgagagag	ataacatctg	taaacagatc	cacctgccag	cccagagtgg	aagcagccgt	300
gtgttggagg	ccatgcggag	gggatattca	agagaagctt	atgtggagtt	agttcaccat	360
attagagaat	ctattccagg	tgtgagcctc	agcagcgatt	tcattgctgg	cttttgtggt	420
gagacggagg	aagatcacgt	ccagacagtc	tctttgctcc	gggaagtcca	gtacaacatg	480
ggcttctctc	ttgcctacag	catgagacag	aagacacggg	catatcatag	gctgaaggat	540
gatgtcccg	aagaggtaaa	attaaggcgt	ttggagggaac	tcatactat	cttccgagaa	600
gaagcaacaa	aagccaatca	gacctctgtg	ggctgtacct	agttggtgct	agtggaagg	660
ctcagtaaac	gctctgccac	tgacctgtgt	ggcagggaatg	atggaaacct	taaggatgat	720
ttccctgatg	cagagatgga	ggatgtcaat	aacctgtggc	tcagggtcag	agcccagcct	780
ggggactatg	tgctggtgaa	gatcacctca	gccagttctc	agacacttag	gggacatggt	840

ctctgcagga	ccactctgag	ggactcttct	gcatattgct	gacctgagag	gatggcctca	900
gagctgactt	gggcaatcct	ccccaacagg	aaggggagac	attgcctgcc	actgaggaaa	960
caggtcatga	aggtggagat	aagctgcaag	gggcgaagca	actttatgtc	agtggaaaaac	1020
gtgtctcttt	aaagctgcta	tgtgaacagc	ttttacagtc	attaaattta	cctaaactaa	1080
ggttaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaag	ggcggccgct	1140
ct						1142

<210> 93

<211> 2238

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (12)..(12)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (45)..(45)

<223> n equals a,t,g, or c

<400> 93

tgtccttgtt	gncgcgggctg	aagtagcccg	tggggccactt	cctcnaacga	cctgtgcgcg	60
tccatgtggt	tcacctacct	gctgctctac	ctgcactcgg	tgcgcgccta	cagctcccgc	120
ggcgcggggc	tgctgtgct	gctggggccag	gtggccgacg	ggctgtgcac	accgctcgty	180
ggctacgagg	ccgaccgcg	cgcacagctgc	tgcgccgct	acggcccgcg	caaggcctgg	240
cacctggctg	gcaccgtctg	cgctcctgctg	tccttccct	tcattctcag	ccccctgctg	300
ggctgtgggg	cggccacgcc	cgagtgggct	gccctcctct	actacggccc	gttcatcgty	360
atcttccagt	ttggctgggg	ctccacacag	atctcccacc	tcagcctcat	cccggagctc	420
gtcaccaacg	accatgagaa	ggtggagctc	acggcactca	ggtatgcgtt	caccgtggty	480
gccaacatca	ccgtctacgg	cggccgctgg	ctcctgtctg	acctgcaggg	ctcgtcgcgg	540
gtggagccca	cccaagacat	cagcatcagc	gaccagctgg	ggggccagga	cgtgcccgty	600
ttccggaacc	tgtccctgct	ggtggtgggt	gtcggcgccg	tgttctcact	gctattccac	660
ctgggcaccc	gggagaggcg	ccggccgcat	gcggaggagc	caggcgagca	cacccccctg	720
ttggcccctg	ccacggccca	gcccttgctg	ctctggaagc	actggctccg	ggagccgct	780
ttctaccagg	tgggcatact	gtacatgacc	accaggctca	tcgtgaacct	gtcccagacc	840
tacatggcca	tgtacctcac	ctactcgctc	cacctgcccc	agaagtcat	cgcgaccatt	900
cccctgggtga	tgtacctcag	cggcttcttg	tcctccttcc	tcatgaagcc	catcaacaag	960
tgcattggga	ggaacatgac	ctacttctca	ggcctcctgg	tgatcctggc	ctttgcccgc	1020
tgggtggcgc	tggcgagggg	actgggtgtg	gccgtgtacg	cagcggctgt	gctgctgggt	1080
gctggctgtg	ccaccatcct	cgtcacctcg	ctggccatga	cggccgacct	catcggtccc	1140
cacacgaaca	gcggagcggt	cgtgtacggc	tccatgagct	tcttgataa	ggtggccaat	1200
gggctggcag	tcattggccat	ccagagcctg	cacccttgcc	cctcagagct	ctgctgcagg	1260
gcctgcgtga	gcttttacca	ctgggcgatg	gtggctgtga	cgggcggcgt	gggcgtggcc	1320
gctgccctgt	gtctctgtag	cctcctgctg	tggccgaccc	gcctgcgacg	ctcccagggc	1380
ggagaacacc	gaacacccag	tgaaggtgag	gggatcagca	cggcgccgcc	accgtgctgg	1440
aacgagactc	agccacaagg	aggtgcgaag	ctctgaccca	ggccacagtg	cggatgcacc	1500
ttgaggatgt	cacgctcagt	gagagacacc	agacacagaa	gggtacgctg	tgatcccact	1560
tctatgaaat	gtccaggaca	gaccaatcca	cagaatcagg	gagaggattc	gtgggtgccg	1620
ggactgagga	gggggacctg	gggtgacta	ggtgacataa	tggggatcag	cacgggcggc	1680
accagcacac	acgtgctgga	atgagaactc	agccacaagg	ggagggtcga	agttctgacc	1740
caggccacag	tgcggatgca	cctttgagga	tgtcacgctc	agtgagagac	accagacaca	1800
gaagggtacg	ctgtgatccc	acttctatga	aatgtccagg	acagaccaat	ccacagaatc	1860
agggagagga	ttcgtgggtg	ccgggactgg	ggagggggac	ctgggggtga	ctaggtgaca	1920
taatggggac	aagggtgctg	tttctggggg	gatgagaatg	ttctgggaatc	agaatgggat	1980
ggctgcacgg	cgtggttgaa	gggtactgaa	ggccaccctt	cagtgtacga	aggggtagat	2040
ttttgtattt	ttaccaacaa	taaacaaaaa	gaaaagaaaa	caaacaaaaa	aaaaaagaaa	2100
aagataaaaa	aggtagagaa	caagaaagaa	aaaaaagaaa	acaagggggg	actttttggg	2160
cgggggagaa	aggggtataa	gggcgcgggg	tcaaagggtt	cgagcaccct	tttttacaag	2220
agggatagg	ggcccata					2238

<210> 94
 <211> 1052
 <212> DNA
 <213> Homo sapiens

<400> 94
 acgcgtccgg ccagccagtc cgcccgtccg gagcccggct cgctggggca gcatggcggg 60
 gtcgcgcgtg ctctgggggc cgccggccgg gggcgctcggc cttttggtgc tgctgctgct 120
 cggcctgttt cgccgcccc ccgcgctctg cgccggccgg gtaaaggagc cccgcggcct 180
 aagcgcagcg tctccgccct tggctgagac tggcgctcct cgccgcttcc ggcggtcagt 240
 gccccgaggt gaggcggcgg gggcggtgca ggacctggcg cgggcgctgg cgcattctgct 300
 ggaggccgaa cgtcaggagc gggcgccggc cgaggcgagc gaggtgagg atcagcaggc 360
 gcgcgtcctg gcgcagctgc tgcgcgtctg gggcgccccc cgcaactctg atccggtctt 420
 gggcctggac gacgaccccc acgcgcctgc agcgagctc gctcgcgtc tgctccgcgc 480
 ccgccttgac cctgcgcgcc tagcagccca gcttgctccc gcgcccgtcc ccgcgcggc 540
 gctccgaccc cgcccccgg tctacgacga cggcccccgc ggcccgatg ctgaggaggc 600
 aggcgacgag acacccgacg tggaccccga gctgttgagg tacttgctgg gacggattct 660
 tgcgggaagc gcggactccg agggggtggc agccccgcgc cgcctccgcc gtgcccga 720
 ccacgatgtg ggctctgagc tgccccctga gggcgctgct gggcgctgc tgcgtgtgaa 780
 acgcctagag accccggcgc ccagggtgcc tgcacgccgc ctcttgccac cctgagcact 840
 gcccgatcc cgtgcacctt gggacccaga agtgccccgc ccatcccgcc accaggactg 900
 ctccccgcca gcacgtccag agcaacttac cccggccagc cagccctctc acccgaggat 960
 ccctaccccc tggccccaca ataaacatga tctgaagcag caaaaaaaaa aaaaaaaaaa 1020
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aa 1052

<210> 95
 <211> 1492
 <212> DNA
 <213> Homo sapiens

<400> 95
 gccttccac actccattcc ctgtcaagtt atggtgtgct cctcacccca gctgctccta 60
 gagaggccct tkttacctgt gtcatcatg tttctaacaa gccaccctcc acccgtctt 120
 gtgtgcccc tgcacctgtg catctgtgct gtgtgggtgt tggtgccct tttgcgatg 180
 catggggcat cccctgcccc gaccagcggg acaaggagcg ggaacggcgg ctgcaggagg 240
 cacggggccg gccaggggag gggcgccgga acacagccac tgagaccacc acgaggcaca 300
 gccagcgggc agctgatggc tctgctgtca gcactgttac caagactgag cggctcgtcc 360
 actccaatga tggcacacgg acggcccgca ccaccacagt ggagtcgagt ttcgtgaggc 420
 gctcggagaa tggcagtggc agcaccatga tgcaaaccaa gaccttctcc tcttctctt 480
 catccaagaa gatgggcagc atcttcgacc gcgargacca ggccagccca cgggcgggca 540
 gcctggcggc gctcgagaaa cggcaggccg agaagaagaa agagctgatg aaggcgcaga 600
 gtctgcccga gacctcagc tcccaggcgc gcaaggccat gattgaraag ctggagaagg 660
 agggcgccgg cggcagccct ggccggacccc gcgcagccgt gcagcgatcc accagcttcg 720
 gggctcccaa cgccaacagc atcaagcaga tgcgtgtgga ctggtgtcga gccaaagactc 780
 gcggctacga gcacgtcgac atccagaact tctcctccag ctggagtgat gggatggcct 840
 tctgtgccct ggtgcacaac ttcttccctg aggccttcga ctatgggcag cttagccctc 900
 agaaccgacg ccagaacttc gaggtggcct tctcatctgc ggagacccat gcgactgcc 960
 cgcagctcct ggatacagag gacatggtgc ggcttcgaga gcctgactgg aagtgcgtgt 1020
 acacgtacat ccagggaattc taccgctgtc tggctccagaa ggggctggta aaaacaaaaa 1080
 agtectaamc cctgctcggg gccccacgga tgcgtgtgga ctgtgtgccc ctggtggagg 1140
 tggacgacat gatgatcatg ggcaagaagc ctgaccccaa gtgtgtcttc acctatgtgc 1200
 agtcgctcta caaccacctg cgacgccacg aactgcgcct gcgcggcaag aatgtctagc 1260
 ctgcccggcc ccatggccag ccagtggcaa gctgcgcgcc ccaactctccg ggcaccgtct 1320
 cctgectgtg cgtccgcccc ccgctgccct gtctgttgcg acaccctccc cccacatac 1380
 acacgcagcg ttttgataaa ttattggttt tcaamraaaa aaaaaaaaaa aaaaaaaaaa 1440
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa ag 1492

<210> 96
 <211> 954
 <212> DNA

<213> Homo sapiens

<400> 96

gaattcggca	cgagcccaca	ccaaacctgt	ggacgcccac	ccgggaccgc	cgctggctgg	60
ctgctggctc	actcgaccgt	catggagacc	ctggggggccc	ttctgggtgct	ggagtttctg	120
ctcctctccc	cggtggaggc	ccagcaggcc	acggagcatc	gcctgaagcc	gtggctgggtg	180
ggcctggctg	cggtagtcgg	cttcctgttc	atcgtctatt	tggtcttgct	ggccaaccgc	240
ctctgggtgt	ccaaggccag	ggctgaggac	gaggaggaga	ccacgttcag	aatggagtcc	300
aacctatacc	aggaccagag	tgaagacaag	agagagaaga	aagaggccaa	ggagaaagaa	360
gagaagagga	agaaggagaa	aaagacagca	aaggaaggag	agagcaactt	gggactggat	420
ctggaggaaa	aagagcccgg	agaccatgag	agagcaaaga	gcacagtcac	gtgaagattc	480
ctggctgcct	ctccaggca	gtccccaga	gatgcctctt	ctgcccccta	aaagcagtgc	540
cctggacttg	aagcccgtga	aatgactcca	tctgggattc	agaatacagt	gttctcaagt	600
gaagaaggct	tgaaccccac	cccacctccc	tcattggggg	ctctctgggc	aaacatgggt	660
ttcatgaccc	cctcttcctg	agcttggtcc	ctgctgggtg	attcttctta	tactcggaga	720
gcateccctg	ttgaggagac	acccgcaatc	ctccacgac	tcattggctcc	acctgcttct	780
ccccactgcc	tgatctcttt	tctctctgcc	tgatgtctac	tgaacagaac	ttccccctct	840
ccatgcaccc	actgccagct	gagagctgct	tcccaatggc	ctgcattaaa	gcattcgtaa	900
cagccaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	tcga	954

<210> 97

<211> 1794

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1675)..(1675)

<223> n equals a,t,g, or c

<400> 97

gctcctctag	tgactgctgg	ggtgctagtt	ttcacgggta	ccacagaact	tgagagagga	60
aaatgagaac	ggcaaattaa	aatgccataa	aattccattc	ttaacaagcg	ttagtTTTTT	120
tttcttatat	atccactccc	tcacatatct	tatgacatat	gagaaatcct	aacatgggac	180
ttgggtgata	attagcattg	aatgaattta	agttttcttt	ctttctttct	tttcttttat	240
cttctgtggt	ctcctgcaga	atcagtctat	aaaaagggca	tggtaaaaaa	aaatctatct	300
catagcattg	ttgaaaagat	taaatgacat	aataagatga	tgcataatata	gtagctagca	360
ctgtacctga	tgcatattag	gagcttgata	atattactaa	cattatcatc	atcaatgcta	420
tctgagcaaa	gaggctgttc	cttctttcca	gccagagtcc	ttctgttgga	taatatttcc	480
agctgtgaac	cccaaccaga	gaccttgaag	cctttatttc	cttttctctc	attggccttt	540
ggctgaagtc	tcctttctgc	agagaacaaa	gtgaccagct	tttgatgaac	tattttcctc	600
ttttatccat	ttccaagtgt	tagccatagt	gaagaagtgt	agctgggtgc	tagcccaact	660
caagaagtga	taatgtwata	tccaacccaa	gataaactca	aggataactt	tcaacacggc	720
tactcaagca	gttcaggggg	gaggcatctt	gtagagagga	gaccaggaag	tcacttggca	780
gctggggccag	cacacagagg	gccattgtct	cagtaaagca	gctaacctcc	atctcttcat	840
caaaccatcc	tagactcagc	actctgcaga	gaaggagcag	atggagggaa	tgtgtggaga	900
gattagataa	gaaggatttc	taatctagtg	ggggagcgag	taaaatgtac	agaagtttga	960
gaagccaagc	tcttatgtam	maatccrccc	ccatcactca	acaatcccca	ctgtatgaat	1020
aaagcctgga	aagtttccaa	ttaaaacagt	gcttgtgaat	attggcaagg	ggtatctttg	1080
tgtgcagggt	acatttaaag	ggagaagggt	gaagatacac	ccttgcctty	taggagtaca	1140
ctttctgaga	gcttgttcac	caggctgtga	gtttctcagt	ctatctgttt	ctcagtctgt	1200
tagtaatgaa	tgtatctccc	acttagcaca	gcagctagca	catagtagat	gcctaacaaa	1260
tgtgtgttaa	attgaatggt	ggaagtctgt	gtcctgaaag	cttttcttca	catattacaa	1320
ggctttttat	ttgttcaaca	catttttacc	aagttttttt	ctgtgttcca	ggtcttttga	1380
ttagctgttt	ttaagtcaca	gaaatgggtg	tcgggaacaa	aaccagtcaa	aagtcctcat	1440
tctacatcat	ttacactttc	ccttcctata	tttataagtt	ttaatatcag	cttctacaat	1500
aggttccaga	acaagtgggtg	ctcaaggaa	ggagaaaatg	actattccaa	ccctagctgt	1560
agggtgaacca	aaaaccccag	agaaatcaaa	gtgtagttaa	aagcagtgtc	tctcaagttg	1620
taatgtgcat	atagatcacc	tggggttggt	attaaaatgc	aaattctaaa	agagncagga	1680
gaatatcttg	agcctgggag	ccagaggttg	cagtgaagccg	agatcattcc	actgcattcc	1740
agcctgggtg	acacagcgag	actccatctt	aaaaaaaaaa	aaaaaaaaaa	cgta	1794

<210> 98
 <211> 1262
 <212> DNA
 <213> Homo sapiens

<400> 98
 cctaattggcc cgasctgaat acttgaagga gctcaagatg aggggaatctc gctgggaagc 60
 tgacaccctg gacaaagagg gactgtcgga atctgttcgt agctcttgca cccttcagtg 120
 accctagaag aatgattgga cagatgtgag ccatctggag cagaggggca ctaaccagg 180
 ctgacgcca gaaatgaagt gccactgca gccctggcga gcaggcttct tggatggaca 240
 gtgctgagac ccccatatcc cagagtcccc agcctccctc aggttactct gcaccccaca 300
 gatggtttga tggctgtgct gtatactgga ggggagggca ggactctggg agaacagcac 360
 ttcttttcag agacctttgt tactcggtgg ttactgggtc ctgtgcctgt ccgttttggg 420
 gcatgcagcc ctctatcatt tttggctcgg agaagagggc aaggggcccc cgcaggatrc 480
 ttctgtgctt gccctcgccc tggcagcagg cagctgtgcc cctggcctgc ccttcccggg 540
 accccttatt ccaactcagc tcctctttgc actggaatgg ggcactcaa caccctcag 600
 ggaccaccct cccacagta tgcactcagc cccacagaac ccaccagtct ttctgggaac 660
 tcacacctgc ccgccatctt ggtacttttag gttaatccct caagcatgaa agctggatct 720
 tttgggggtt aagaagccca agccttggtc ctgccctggc ctaggagca ctcaggagg 780
 ttctttggtc ctcatctctc ccacctcgt tcctctggg cccacacta gccacagcgc 840
 gggccttggt ctggagtttg agcctgggac agggagaggg aggcttgag acagtctgac 900
 ccagtgcct ctaggccacc cacttctagg cctgccctgc cgccgtggag cctgggcaa 960
 gctctttccc ctttctgggc ctgggtctcc ccatctcttc aatggggctg ataccttcac 1020
 agccacagc atgggcactt atgaggacaa agtgaattta acctggaaaa gaatgtattt 1080
 gagagtttct tttaaataat cagcgggtgt tgggtatttg tagcccttct gcccttaaat 1140
 gcttccttgg gcaagagctg tctgtcctcc ctgcaggagg ctgagtgtga agagtatcat 1200
 tcattgtttc tctattaaat tattttctgc taaaaaaaaa aaaaaaaaaat ttctgcggtc 1260
 cg 1262

<210> 99
 <211> 2572
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (2527)..(2527)
 <223> n equals a,t,g, or c

<400> 99
 aattcggcac gagtctggac cttcttagmt tgcttgatat caggttggtt ttgtagccat 60
 tttgcttcac agtcacctgg aatgccggga gccctgtctc atcccgatcc tctccttgta 120
 catgggcgca cttgtgcgct gcaccaccct gtgcctgggc tactacaaga acattcacga 180
 catcatccct gacagaagt gcccggagct ggggggagat gcaacaataa gaaagatgct 240
 gagcttctgg tggcctttgg ctctaattct ggccacacag agaatcagtc ggcctattgt 300
 caacctcttt gtttccggg accttgggtg cagtcttgca gccacagagg cagtggcgat 360
 tttgacagcc acataccctg tggtcacatg ccatacggct ggttgacgga aatccgtgct 420
 gtgtatcctg ctttcgacaa gaataacccc agcaacaaac tggtgagcac gagcaacaca 480
 gtcacggcag cccacatcaa gaagtccacc ttcgtctgca tggctctgtc actcacgctc 540
 tgtttctgta tgttttggac acccaacgtg tctgagaaaa tcttgataga catcatcgga 600
 gtggactttg cctttgcaga actctgtgtt gttcctttgc ggaattcttc cttcttccca 660
 gttccagtca cagtggggc gcactcacc ggggtggctga tgacactgaa gaaaaccttc 720
 gtcccttccc ccagctctgt gctgcggatc actgtcctca tcgccagcct cgtgggtcta 780
 ccctacctgg ggggtgcagg tgcgaccctg ggcgtgggct ccctcctggc gggctttgtg 840
 ggagaatcca ccatggtcgc catcgctgcg tgctatgtct accggaagca gaaaaagaag 900
 atggagaatg agtcggccac ggagggggaa gactctgcca tgacagacat gcctccgaca 960
 gaggaggatg cagacatcgt ggaatgaga gaggagaatg aataaggcac gggacgccat 1020
 gggcactgca gggacagtca gtcaggatga cacttcggca tcatctcttc cctctcccat 1080
 cgtattttgt tccctttttt ttgttttgtt ttggtaatga aagaggcctt gatttaaagg 1140
 tttcgtgtca attctctagc atactgggta tgctcacact gacgggggga cctagtgaat 1200

ggtctttact	gttgctatgt	aaaaacaaac	gaaacaactg	acttcatacc	cctgcctcac	1260
gaaaacccaa	aagacacagc	tgccctcacg	ttgacgttgt	gtcctcctcc	cctggacaat	1320
ctcctcttgg	aaccaaagga	ctgcagctgt	gccatcgcg	ctcggtcacc	ctgcacagca	1380
ggccacagac	tctcctgtcc	cccttcacgc	ctcttaagaa	tcaacagggt	aaaactcggc	1440
ttcctttgat	ttgcttccca	gtcacatggc	cgtacaaaga	gatggagccc	cgggtggcctc	1500
ttaaatttcc	cttcgcccac	ggagttcgaa	accatctact	ccacacatgc	aggaggcggg	1560
tggcacgctg	cagcccggag	tccccgttca	cactgaggaa	cggagacctg	tgaccacagc	1620
aggctgacag	atggacagaa	tctcccgtag	aaaggtttgg	tttgaaatgc	cccgggggca	1680
gcaaaactgac	atggttgaat	gatagcattt	cactctgcgt	tctcctagat	ctgagcaagc	1740
tgtcagttct	cacccccacc	gtgtatatatac	atgagctaac	ttttttaaat	tgtcacaaaa	1800
gcgcatactcc	agattccaga	ccctgccgca	tgacttttcc	tgaaggcttg	cttttccctc	1860
gcctttctctg	aaggctgcgc	tagagcgcgt	cacatggagc	atcctaactt	tgcatatttag	1920
tttttaccgt	gaactgaagc	tttaagtctc	atccagcatt	ctaattgccag	gttgctgttag	1980
ggtaactttt	gaagtagata	tattacctgg	ttctgtctatc	cttagtcata	actctgcggt	2040
acaggtaatt	gagaatgtac	tacggtaactt	ccctcccaca	ccatacgata	aagcaagaca	2100
ttttataacg	ataccagagt	cactatgtgg	tcctccctga	aataacgcgt	tcgaaatcca	2160
tgcagtgcag	tatatTTTTT	taagtttttg	aaagcagggt	ttttccttta	aaaaaattat	2220
agacacgggt	cactaaattg	atttagtcag	aatttcctaga	ctgaaagaac	ctaaacaaaa	2280
aaatatTTTA	aagatataaa	tatatgctgt	atatgttatg	taatttattt	taggctataa	2340
tacatttctt	atTTTcgcat	tttcaataaa	atgtctctaa	tacaatacgg	tgattgcttg	2400
tgtgtcaaac	atacctgcag	ttgaaacgta	ttgtatcaat	gaacattgta	ccttattggc	2460
agcagtttta	taaagtccgt	catttgcatt	tgaatgtaag	gctcagtaaa	tgacagaact	2520
atTTTtncat	tatgggtaac	tgggggaata	aatgggggtca	ctgggagtag	gg	2572

<210> 100

<211> 1488

<212> DNA

<213> Homo sapiens

<400> 100

cgccaagttt	cgggagggag	agggtagaaa	ctggaggggg	tggacctgtc	actcacggga	60
ctgaggggtcc	ttttctccc	ctcccaggag	gaacgagaat	gaatatgact	caagcccggg	120
ttctgggtggc	tgcatgtgtg	gggttgggtg	ctgtcctgct	ctacgcctcc	atccacaaga	180
ttgaggagggg	ccatctggct	gtgtactaca	ggggaggagc	tttactaact	agccccagt	240
gaccaggcta	tcataatcat	ttgcctttca	ttactacgtt	cagatctgtg	cagacaacac	300
tacaaactga	tgaagttaaa	aatgtgcctt	gtggaacaag	tgggtggggtc	atgatctata	360
ttgaccgaat	agaagtgggt	aatatgtttg	ctccttatgc	agtgtttgat	atcgtgagga	420
actatactgc	agattatgac	aagaccttaa	tcttcaataa	aatccaccat	gagctgaacc	480
agttctgcag	tgcccacaca	cttcagggaag	tttaccattga	attgtttgat	caaatagatg	540
aaaacctgaa	gcaagctctg	cagaaagact	taaacctcat	ggccccagg	ctcactatac	600
aggctgtgcg	tgttacaaaa	cccaaaatcc	cagaagccat	aagaagaaat	tttgagttaa	660
tggaggctga	gaagacaaaa	ctccttatag	ctgcacagaa	acaaaagggt	gtggaaaaag	720
aagctgagac	agagaggaaa	aaggcagtta	tagaagcaga	gaagattgca	caagtggcaa	780
aaattcgggt	tcagcagaaa	gtgatggaaa	aagaaactga	aaagcgcatt	tctgaaatcg	840
aagatgctgc	attcctggcc	cgagagaaag	cgaaagcaga	tgctgaatat	tatgctgcac	900
acaaatatgc	cacctcaaac	aagcacaagt	tgaccccggg	atatctggag	ctcaaaaagt	960
accaggccat	tgcttctaac	agtaagatct	atTTTggcag	caacatccct	aacatgttcg	1020
tggactcctc	atgtgctttg	aaatattcag	atattaggac	tggagagaaa	agctcactcc	1080
cctctaagga	ggctcttgaa	ccctctggag	agaacgtcat	ccaaaacaaa	gagagcacag	1140
gttgatgcaa	gagggtggaaa	tgttctccat	atcaagatgt	ggcccaagg	gttaagtggg	1200
aacaatcatt	atacggactc	ttcagattta	cagagaactt	acacttcac	tgttccacct	1260
ctcctgcgat	agtcctgggt	gctccactga	ttggaggata	gagccagctg	tctgacacac	1320
aaatggctct	ttcagccaca	gtcttatcaa	gtatcctata	tgtattcctt	tctaaactgc	1380
tactcatgaa	tgaggaaagt	ctgatgctaa	gatactgcct	gcactggaat	gttaaact	1440
aaatatataa	caagctgtgt	tttcctaagc	tgaaaaaaaa	aaaaaaa		1488

<210> 101

<211> 704

<212> DNA

<213> Homo sapiens

<220>
 <221> misc_feature
 <222> (287)..(287)
 <223> n equals a,t,g, or c

<400> 101
 actgtgtctg tcttgtctct gatatttata tgccattatg tggcctctac tgccttagga 60
 ttctaattgtt cccactaaga tcagctaact cagttccact acagtgttta ccaccatcat 120
 ctctcgcaaa caaagacagc cacttcagag ctccataggaa atagtgggtgc tcccatcatc 180
 attgcattcc ttaatsacat ggtgaaaatt aacaatggct aaggagcctt tgtgttttct 240
 cctctacaat atgcccagga atttctggca ttttggccat cttattnata ggctattact 300
 gaatttmagc ctmatcctmc caaattatta atgccaaaat attaaactctt gattcttagg 360
 tgagtgcacc catgccataa aatttgccat gatctaacct taaatgtatt ctcatatatg 420
 ctgtccaagt ttcttctgat taaaatggca aggcctttag ttctctaca taggttttct 480
 ctctccagag aaggcctcaa ttctctgact aggcctatgtt gggatataac tggaggcact 540
 aataggtagt agggtaaatt ctttatttta ttatttttgg agacagggag ggtcttgctt 600
 tgttcagact ggagtgcagt ggtgtgatca tggctcattg caactttgaa ctctgggagc 660
 acagagcaag actccatctc aaaaaaaaaa aaaaaaaaaa tcga 704

<210> 102
 <211> 1022
 <212> DNA
 <213> Homo sapiens

<400> 102
 ttcccggtgc gacccacgcg tccgcccacg cgctcgggctt ggggccagca ccctgtctca 60
 aagatggcaa aatgaggcta gttctggatg agctagctgg tgtgggttcc aaccatagga 120
 acacactgat gctcaaattcc taagggtgcca agctctaggc cctggaggct ggtagaacag 180
 gatctatgcc tggaaatcctg gcagggattc ctgtcaaggga cttgtgttta agcctgcttc 240
 agggcttcag gctgcttctg ctctgtgtct gccaggctg gctgagcggg tggatgggtg 300
 gacagaaggg ctcaccaagg attgtggaca tagggtaggc cctggtagca cgggtttcag 360
 gctgttatca cttcccttgt aggaacatag ccagaagcag atgagccagg gtagagggct 420
 ggcccctcct ctcatcttcc cttcagtcct aaattgtctc cagcgatggg aagaggccag 480
 ggactgtaac ccttgtgctg tgtattctct gagcctctgc tcaactctag ggccaagcag 540
 ctccaagcc ggggccctct cttggccaaa atctgaggag cagtctaggc tacaggcttt 600
 ttggtaggta ggttctggct gcctgttaat gcagttaggc cccctgatta ggtacagtga 660
 gaacaagct agaacaaccc tggcccagaa gactgtgcac tccagcaaga tccagggatg 720
 atagccttgc agggccactg ggagtttgtg cccaagcttc tccctcttct ctccccaggg 780
 ggcaactggga ctgggtccctg cctcctcctc tagcctgggc cttccccaga ggtattaaag 840
 agaagtatga ttctctgtgc ttcaagttctt ttcaggggca tctgccccat agtaccagct 900
 tccaagggg cccccagtc cgtggtgaag cctagcactc atgcagctct tagggaacca 960
 aaaaccagca ctgaaataaa gctgaatgac tgactgaaaa aaaaaaaaaa aaagggcggc 1020
 cg 1022

<210> 103
 <211> 1766
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (14)..(14)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (36)..(36)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature

<222> (1750)..(1750)
 <223> n equals a,t,g, or c

<400> 103
 acggggggcct taanggggaaa cccttcccg aatttncggg tcgaccacg cgtccggttt 60
 tgtttatgga gggtccagta agtgcaaaca accattgcct ggtcctaagg gttcagagtc 120
 cccgaattcc ttcttggacc aggaaagccg gagacgaaga ttcaccattg cagactcgga 180
 tcagttgcct gggtactcgg tggaaaccaa cattctgccc acaaaaatga gagagaaaac 240
 accatcttat ggcaagccac ggcctttgtc catgcctgct gatgggaact ggatggggat 300
 tgtggaccct ttggccagac ctccgaggtca tggcaggaaa ggggaggatg ccctttgccg 360
 gtatttcagt aacgagcgga ttccctccgat cattgaagag agctcctctc ccccataaccg 420
 gttctccaga cccacgaccg agcggcatct gggtccgggt gcggaactaca tccgagggaag 480
 caggtgctac atcaactcag atctccacag cagcgccacg attccattcc aggagggaag 540
 gaccaaaaag aaatctggct cctcagctac gagtccctct ccacagaacc gtccctcctg 600
 gtcagctggt ttacgcgcct caaactgttg actcactgag agggaccctg ctcaggccac 660
 ctgcctggct cctgscceaa gtgccttgcct ttacagtgag acagcctctt ctggtttcag 720
 cctcagttat atgtagggac cttatgcaat ttctttttct ttgaaaagt tatctactgc 780
 ccttcttggga agtttgcagg attggatggg aacaaattca gaggatctta ggtgctggct 840
 tgtggagaca aaaggaggga aatgggtaga gcctgtttgt cttgcttccc cagagataga 900
 atgtgaagac acgcgctaga aatcgagtc ctggccagag acgttatggt cattgtgagg 960
 gactggtggc attgttcctt ttgaggggc tggggggact caaattgggt gctgttttca 1020
 cacagatgtg ttggtttgtg gtccaacttc tttatctgaa aaagccagt agaaaacatt 1080
 tttgatttga tttttctaaa ctatctacca tattttaagt gtagcagctt tgacttttca 1140
 ataacgtggc aagtatctga ttctccttt gaggcagagg tttaagtgtta ggcctgttac 1200
 acttgtttga tacctttttc atgacagtct cagtatagat cagttggtac agaaatacat 1260
 gaacacattt tgatagggct tatttcacac aaagaagttt atggttattt gtgtgggtg 1320
 gtgtgttat atattattgt ctttaaggga aaagaagcta taagattcgc tgacagccaa 1380
 agtatcattt agaaaagtga agcaacaaga tttaggttga tgaaagatac atgagtttgc 1440
 attttgacct gttcagtgct tgtcttccag cagggtgtgt acacttcttc aaaattgtac 1500
 acagtttgcct aattagaaat atcttggaaa gcctcatggt cactaatttt caactagcat 1560
 caggtatttt gaaaacgtgt gtctggatat taactcttgt ttaaaactgaa tgtatgatat 1620
 tttgttagaa tggaaaagta ctatcttgtt aatttaagta ttttaaataat agttgtatat 1680
 ttttcttaaa aaaaaaaaaa aaaaaaaaaa aaagggcggc cgctctagag gatcccgca 1740
 ggggcccacn attacgcgtg agcgtt 1766

<210> 104
 <211> 2286
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (2262)..(2262)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (2264)..(2264)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (2272)..(2272)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (2278)..(2279)
 <223> n equals a,t,g, or c

<400> 104

gctgatgtcg	aggttcatcc	tgaaccacct	ggtgctggcc	attccactga	gggtgctggt	60
ggttctgtgg	gccttcgtct	tgggcctatc	cagggtcag	ctggggcggc	acaatgtcac	120
cgacgtagct	tttggctttt	ttctgggcta	catgcagtac	agcatcgtgg	actattgctg	180
gctctcacc	cataatgtct	cggtcctctt	tttactgtgg	agtcaacgat	gacaccatct	240
cattgattat	ggcaccagga	agtctgaagg	tttccacatt	cgatgatgtc	aacctaaacc	300
agcagccatc	cgccttgctc	ctcttaggca	tttcaggctt	cctttgggat	ttcaggtgtc	360
ccatgatctt	gatgtgctgc	taggctggag	cacacactgg	ccattactga	acacagccat	420
attagggaaa	gcaaaaaaac	ccaaaaaatc	ctctattgta	tattttattca	acaactgttt	480
atgtttccag	gacaactgca	aagaaaacaa	gctgaggtgg	ttatactgtt	gctgttaaaa	540
gttggtatca	gtaagatttg	tgttttgtga	taatccctaa	atcaacatac	cacttgtaaa	600
ctgaacttcg	agaaagaaac	atgatgttca	ttctgtaaat	atacatgcag	acaggtcatg	660
tactaatcct	agtccttttc	ctgaggtaga	ttttaaacag	tattttttaa	gtccaagaca	720
taggtttttc	tagtttatcc	cctgaagatc	tgttgccaca	gttgggagat	ttcttcttaa	780
tcctgatctt	cttggtgaagc	ttttttactt	tattatctct	ataattttatt	atctctatcc	840
atatttgtgg	atcggttagt	gggaaaagag	attataatac	ttgtctttct	ctcctctccc	900
tccatccctc	aaaagatctt	tatgcatttc	ccactactcc	cttactgtct	tttagcattc	960
agagaaaaag	ccaacttgct	taaagaggaa	tcacttaaaa	ggtaggcata	tctaagatgc	1020
tcatagaaga	ggaagaatgg	gacatggccc	catgcttatt	tttgtttaca	acgtaacatg	1080
gcattgagaga	ggcgagagaa	actaagttgc	tggggaaagt	tagaggaaact	gaaagtttgg	1140
gaataggctg	accacataat	atgccagtga	ccagtatgac	aggagatggg	gccctgctgc	1200
cagtcactctc	cactgaataa	agaataatgc	tcctctttca	gggtaataaa	gtggggaaaa	1260
ggaacgtctt	ctcaatgcaa	gaacataagc	tttctcgtat	atacctgtat	gctacagtgt	1320
ttcacatgga	attccgtttt	ctgaggtaca	gcacatttta	ggtaacagta	tttaacttga	1380
aattcatcat	gggagtctgc	tgctatacca	ggcacaagat	aaaactccaa	aattttctgt	1440
tacattgacc	tttacattta	aagctgttca	tccatggtgc	ctccccaat	cataagacca	1500
aagaccacca	aacgcagggg	ggactctgct	cattattctt	tgaccagaaa	agactggaga	1560
aggatgtgct	tttaagtgtc	gctctacctg	aaaagaaatc	ctttaaatga	cctatggaa	1620
tgatgtcctc	agataatctt	aatgactatt	ttggcattta	taaatagaaa	tgattatgga	1680
ctttgatctg	ccatacggag	gttcggaacc	tggagaaygg	ctgtgataag	taggttttga	1740
ttgagtgaag	gcatagagct	gttcagagtg	aggggcatag	tgaaaaagga	acagccatgc	1800
ctcawaatca	aatcattttg	rttcccacag	cacctcgaat	accgactacc	tcttcacttg	1860
ctaagcagc	taactgtgta	agctctaagt	ggtttgggtt	tgttgtttta	ccttagcgag	1920
atcctttaac	tgcagcaata	ttcaagccag	atatttggaa	gcaaatgata	tttctcttgc	1980
cagtgctccac	aaatctgaat	attaggggca	tgaatttagg	cttaccatct	gatttgtaat	2040
tacaattttg	gaattctctg	ttttagttgc	tgaggcctga	gttttctggc	tcttaaagca	2100
tagatcattt	cacctgatgt	ttttgaagca	tcctaagtac	agtagagtag	aaaactgatt	2160
tctttgttaa	ttgtacactg	aataatgcct	tttaaaaaatc	aaaataaaat	taacaaataa	2220
tggtgaaaaa	aaaaaaaaaa	aaaaaaaaact	cgaggggggg	cncnaaaaca	antcgacnna	2280
tagtga						2286

<210> 105

<211> 1240

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1225)..(1225)

<223> n equals a,t,g, or c

<400> 105

gtgaaacgcc	tgggctcaag	ctgattcacc	tgctccacc	tcccacagtg	ctgggattac	60
aaacatgatc	ccccacgccc	agccaacaca	aaactttctga	tgtctgtttt	tctcatctgt	120
gaactggagc	taaggctaag	tggctgtctt	gtttaataag	agtttgaatc	agatggcctg	180
gcataagag	tcactggcct	gagagaatgt	caggggcatt	tgtaaagtgt	ttaaagggtg	240
aaaaatcctg	agggattatt	attattgcta	ttgttgttat	tattcacaga	cacatccaac	300
agccattgtc	tgctctctta	tctgtcatgc	tttctgcacg	agcgtcagcc	tgagcttcaa	360
tctgtgtgta	tactgcagc	ttacgtcctt	gccacccctc	cagaaccag	tttcatcctt	420
gtaggttttt	ccgaagcagg	atttgcacaa	gtggcgtgtt	ttcttaagta	tttattttgc	480
aggccattta	ctcgcatgg	ctatttttac	agtgggtaag	gagcaaggct	aaaaataact	540
tagctcataa	ccagacaggt	tctgcatttg	acattttacgt	ggaattcatt	tgcattctcat	600

ttgttcgcct	ttctgtttta	caggtagaat	gtaagaaagc	tcagccgaaa	gaagtcattgt	660
tcccacctgg	gacaagaggg	cgggcccggg	gactgcctta	caccatggac	gcgttcattgc	720
ttggcatggg	gatgctgggt	gagtctggac	aggaccgcag	gtcaccatgg	actgggaggg	780
ctatggaggc	ctctactccc	aactgggtca	cctaccagtg	gggcaaactg	cttcaccttt	840
ctaagcctca	gtttccttgt	ctgtagatga	ggatgataat	tcccgcgttc	aagacagttg	900
tgatgattaa	gtgtgggtgt	gtgtgtgtgc	atgcatgtgt	gtgtgtgtgt	gtgtgtttgt	960
atttataata	ttgccccatg	cctggccttat	aggatatgtt	agactatttt	ctctcttttc	1020
catctccttc	ctcaaaagaa	ggaaaagtcc	ccctctattg	cctcagccct	ctcatctgag	1080
tgggagttct	taagatgtaa	ggactcctgg	ctgacttgac	ttgtgtgggc	taaggctacg	1140
ttttctaaaa	ctkgggagag	gaggggaagt	gtaagggtgg	gcgataatcc	tgtctattta	1200
aatgattaac	atttttctct	tgggntatca	aaatttgcat			1240

<210> 106

<211> 997

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (963)..(963)

<223> n equals a,t,g, or c

<400> 106

cccgaactcta	ggccggaagc	gcgcggagac	catgtagtga	gaccctcgcg	aggtctgaga	60
gtcactggag	ctaccagaag	catcatgggg	ccctggggag	agccagagct	cctggtgtgg	120
cgccccgagg	cggtagcttc	agagcctcca	gtgcctgtgg	ggctggaggt	gaagttgggg	180
gccctgggtgc	tgctgctggg	gtcaccctc	ctctgcagcc	tggtgcccat	ctgtgtgctg	240
cgccggccag	gagctaacca	tgaaggctca	gcttcccggc	agaaagccct	gagcctagta	300
agctgtttcg	cggggggcgt	ctttttggcc	acttgtctcc	tggacctgct	gcctgactac	360
ctggctgcca	tagatgaggg	cctggcagcc	ttgcacgtga	cgctccagtt	cccactgcaa	420
gagttcatcc	tggccatggg	cttcttcctg	gtcctgggtga	tggagcagat	cacactggct	480
tacaaggagc	agtcaggggc	gtcacctctg	gaggaaacaa	gggctctgct	gggaacagtg	540
aatggtgggg	cgcagcattg	gcatgatggg	ccagggggtcc	cacaggcgag	tggagcccca	600
gcaacccctc	cagccttgcg	tgctgtgtga	ctgggtgtct	ccctggccct	ccactccgtg	660
ttcgaggggc	tggcggtagg	gctgcagcga	gaccgggctc	gggccatgga	gctgtgcctg	720
gctttgctgc	tccacaaggg	catcctggct	gtcagcctgt	ccctgcggct	gttgagagagc	780
caccttaggg	cacagggtgg	ggctggctgt	gggacccctc	tctcatgcat	gacacctcta	840
ggcatcgggc	tgggtgcagc	tctggcagag	tcggcaggac	ctctgcacca	gctggcccag	900
tctgtgctag	agggcatggc	agctggcacc	tttytytata	tcaccttityt	ggaaatcctg	960
ctntttcatc	ccaaatttaa	gggggtttca	agaagaa			997

<210> 107

<211> 312

<212> DNA

<213> Homo sapiens

<400> 107

aattccccgg	tcgaccacag	cgtccgtgat	gagtggattt	gtactcttac	ccaggctcctg	60
agggccagcc	caccagcat	ccccaccct	gatgacgctg	tccctacaac	tggctgaact	120
ggtgcatttt	gtgtgtgcct	tccagagcca	gtggactggg	gtgtatccaa	tgatgccacc	180
tctgaaacct	acagaaccac	tatgctttgc	atgtgtaccc	tgcagggtct	gagggccagg	240
ctgtctggtg	gctctgtctc	tgggtgacag	agcaagactc	tgtctcaaaa	aaaaaaaaaa	300
agggcgcccg	ct					312

<210> 108

<211> 864

<212> DNA

<213> Homo sapiens

<400> 108

ggcagagcgc	gaccgggccc	gcggggctgc	tcggggcgga	tcggggccggg	ccgctgccgc	60
------------	------------	------------	------------	-------------	------------	----

gccatggact	cccgtgtcca	gcctgagttc	cagcctcact	gagtggccac	ccccaaagtg	120
ctgccagccg	aggaagcccc	cagcactgac	catgtctatt	atggaccaca	gccccaccac	180
ggcgctggtc	acagtcacgc	tcatacctcat	tgccatcgcg	gccctggggg	cctttgatcc	240
tgggctgctg	gtgctacctg	cggtctgcagc	gcatacagcca	gtcagaggac	gaggagagca	300
tcgtggggga	tggggagacc	aaggaaccct	tctgtctggg	gcagtattcg	gccaarggac	360
cgtgcgtgga	gagaaaggcc	aagctgatk	mtcccaaacy	gscgggaart	ycacggstga	420
vccaggatgc	aaaggcccycc	tggccctgt	ttgcaagccg	gccaagargg	ggctgggagg	480
ggcaaaamcc	atacggatgc	gctgctgtct	gagaggaagg	gctgacactt	gctggcatgg	540
cctctgcggg	tttcgtccat	cgcatgcact	gatgcccggy	gacttggctg	tcctgggctt	600
cccctcgccc	tccagggtgag	gctgcccatt	gcaggcactg	ggtaggcctg	accttgctgg	660
ggctcatggc	cctgtagcgc	ttttgttact	tgaatgtcta	gctgagcctg	tttttgatgg	720
agctactact	ttaatgcgtg	aactaaca	cctgtgaact	gtaaataggc	ccctggaagc	780
acgtgcttaa	gcccttttgc	tgatttttaa	aaatatcatc	tagcgcaaaa	aaaaaaaaaa	840
aaaaaaaaaa	aaaaaaaaaa	aaaa				864

<210> 109

<211> 1258

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)..(1)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1196)..(1196)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1200)..(1200)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1237)..(1237)

<223> n equals a,t,g, or c

<400> 109

nagatggcgc	tacgtctgct	gcgaggggcg	gcgcgcggag	ctgcggcggc	ggcgtgctg	60
aggctgaaag	cgtctctagc	agctgatatc	cccagacttg	gatatagtcc	ctcatcccat	120
cacaagtaca	tccccggag	ggcagtgcct	tatgtacctg	gaaatgatga	aaagaaaata	180
aagaagattc	catccctgaa	tgtagattgt	gcagtgctcg	actgtgagga	tggagtggct	240
gcaaacaaaa	agaatgaagc	tcgactgaga	attgtaaaaa	ctcttgaaga	cattgatctg	300
ggccctactg	aaaaatgtgt	gagagtcaac	tcagtttcca	gtggtctggc	ggaagaagac	360
ctagagaccc	ttttgcaatc	ccgggtcctt	cctccagccc	tgatgctacc	aaaggtggaa	420
agtcctgaag	aatccagtg	gtttgcagac	aaattttcat	tccacttaaa	aggccgaaaa	480
cttgaacaac	caatgaattt	aatccctttt	gtggaaactg	caatgggttt	gctcaatttt	540
aaggcagtgt	gtgaagaaac	cctgaagggt	gggcctcaag	taggtctctt	tctagatgca	600
gtcgtttttg	gaggagaaga	ctttcgagcc	agcatagggt	caacaagtag	taaagaaacc	660
ctggatattc	tctacgccc	gcaaaagatt	gttgtcatag	cgaaagcctt	tgggtctcaa	720
gccgtagatc	tgggtgtacat	tgactttcga	gatggagctg	ggctgcttag	acagtcacga	780
gaaggagccg	ccatgggctt	cactggtaag	caggtgattc	accctaacca	aattgccctg	840
gtccaggagc	agttttctcc	ttccctgaa	aaaattaagt	gggctgaaga	actgattgct	900
gcctttaaag	aacatcaaca	attagaaaag	ggggccttta	ctttccaagg	gagtatgac	960
gacatgccat	tactgaagca	ggcccagaac	actgttacgc	ttgccacctc	catcaaggaa	1020
aaatgatctg	ttaaataag	ctgtcatcag	ctaaagggtt	attgaagctg	cagagggtac	1080
aacttgtgct	tgccagagga	cgccaatgaa	gtttgaaaca	ccaacaatca	gagattttgt	1140
ttctgttcct	cattaaatca	tgagcttttg	tgcccagagc	tctggacgga	ctgttntctn	1200

aggaatttaa ccggatggga agttttttaa acttttncaa ccaacttttt taaggccc 1258

<210> 110

<211> 883

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (19)..(19)

<223> n equals a,t,g, or c

<400> 110

gtcaccgtgg	gcgtttaant	atgatccccg	gctcagattc	gcagactgca	ctgaacttcg	60
gctctacgtt	gatgaagaag	aagtctgata	ctgaggggtcc	cgcgctgctc	ttccctgaga	120
gtgaactttc	catccggata	ggtagagctg	ggcttctttc	agacaagagt	gagaatgggtg	180
aggcatatca	gagaaagaag	gcggcagcca	ctggccttcc	agaggggtcct	gctgtccctg	240
tgccttctcg	agggaaatctg	gcacagcccc	gcggcagcag	ctggaggagg	atcgcaactgc	300
tcactcttggc	catcactata	cacaacgttc	cagaggggtct	cgctgttgga	gttggatttg	360
gggctataga	aaagacggca	tctgtacct	ttgagagtgc	caggaatttg	gccattggaa	420
tcgggatcca	gaatttcccc	gagggcctgg	ctgtcagcct	tccttgcga	ggggcaggct	480
tctccacctg	gagagctttc	tggatgggc	agctgagcgg	catgggtggag	cccctggccg	540
gggtctttgg	tgcctttgcc	gtggtgctgg	ctgagcccat	cctgccctac	gctctggcct	600
ttgctgccgg	tgccatggtc	tacgtggtca	tggacgacat	catccccgaa	gcccagatca	660
gtggtaatgg	gaaactggca	tcctgggcct	ccatcctggg	attttagtg	atgatgtcac	720
tggacgttgg	cctgggctag	ggctgagacg	cttcggaccc	cgggaaaggc	catacgaaga	780
aacagcagtg	gttggcttct	atgggacaac	aagcttcttt	cttcacatta	aaactttttt	840
ccktcctctc	ttcttcaaaa	aaaaaaaaaa	aaaaaaactc	gag		883

<210> 111

<211> 1465

<212> DNA

<213> Homo sapiens

<400> 111

ggcacgagcg	agccaagttt	gcaccactgc	actccagcct	gggcgacaga	gcaagactca	60
gtctcgaaaa	aaaaaaaaagtt	ggaagcagaa	gtaaaaaaca	tggtaaagaa	tgagaactaa	120
ataaatataa	taattgagag	gtctgcatta	gatgtggcag	ggagaacaag	caaaaagaga	180
tttcagagaa	gatcactgga	attggcagag	gccttgaagg	gcagagtcta	gcatacagaa	240
gatgtaaagc	cacattctgt	gaaggtaagt	agatgtgttt	acctcttttg	cactgtactg	300
gtgcattatg	gggtaaatrt	gtattacttt	tcctgtattg	cttagcacag	agttttgcct	360
atagcaggca	ccagactgtg	ggcttggtag	tacatgacta	ttggtgatta	cagatcaaaa	420
aggacttgaa	atgatcagtt	taaggtcttg	atgggtattg	aagactcaaa	ggatgatggc	480
accctgggag	tgatccacag	aaggacagat	tatttgaaga	tgtaataaac	taaagacaac	540
atggatgtta	aatgatgaaa	aaaagttgga	tggaaaataa	accattggat	ctgcytctgg	600
agtccaagaa	gaatattatt	cttcctacct	cccccttact	ctggctcttc	ctattgtagc	660
cacatgggtc	agtaatgcca	ttgaaaaaca	aaattttaga	ctaagtgggg	tcgcagaaat	720
tttggtctat	cttaaatgga	tgacatctta	ttaaagaaty	tattgtataa	agtgtgctta	780
ttctggcatt	tttttaaatga	agaaaaagtg	taattcagtg	cacatttatg	aatttcaaa	840
atcaataaaa	atgggcaaa	tatatgaacg	cataatccat	agaagaagat	atctgacaaa	900
tgacgttcaa	taaatatattt	tttaataaaa	aattagcctg	tggtagaagt	tgaaatggag	960
aaagaaatag	aaggtagcca	ggttacctac	agctttgtat	atgacactat	agagctagga	1020
ctttattcca	tagatgaggg	aagtctgcta	aagtgtctac	attgaaccca	ttattttgct	1080
agcattgtag	ttgatgtacc	taaaacagac	ttgagccggt	agagtaagta	ggcagacttg	1140
tccaagtggg	aaaaagatga	aactgtgggtg	aggataaaga	gagaaaagga	gcagatttaa	1200
gaaatattaa	aacttgaaa	tactaagact	tgatgatgaa	ctagatgtgt	tagataagag	1260
atagcatgga	gtctagttaa	agttctgttt	ttctcactcg	tgtgactgcc	tcaataacac	1320
aaagcttgat	aggaaataaa	catgagatag	cacatggatc	tattacaagt	ttttgaaatt	1380
gagcttgaaa	agctacttca	aaaaataaat	tctaggccag	gtgtgagycc	atgcgcttga	1440
ttaaaaaaa	aaaaaaaaaac	tcgta				1465

<210> 112
 <211> 1369
 <212> DNA
 <213> Homo sapiens

```

<400> 112
ccccacgcgc cgcccacgcg tccggctggc aagatggcgg gaggggtgcg cccgctgmgg      60
ggcctccgcg ccttgtgtcg cgtgctgtc ttcctctcgc agttctgcat tctgtcgggc      120
ggtgaaagta ctgaaatccc accttatgtg atgaagtgtc cgagcaatgg tttgtgtagc      180
aggcttcctg cagactgtat agactgcaca acaaatttct cctgtacctt tgggaaagcct      240
gtcacttttg actgtgcagt gaaaccatct gttacctgtg ttgatcaaga cttcaaatcc      300
caaaagaact tcatcattaa catgacttgc agattttgct ggcagcttcc tgaaacagat      360
tacgagtgtg ccaactccac cagctgcatg acggtgtcct gtcctcggca gcgctaccct      420
gccaaactgca cgggtgcggga ccacgtccac tgcttgggta accgtacttt tcccaaaatg      480
ctatatgtca attggactgg aggctataag tgggtctacg ctctggctct aagcatcacc      540
ctcgggtggg ttggagcaga ccgtttctac ctggggccagt gsgsggaagg cctcggcaag      600
ctcttcagct tcggtggcct gggaatatgg acgctgatag acgtcctgct cattggagtt      660
ggctatgttg gaccagcaga tggtctcttg tacatttagc tgtggtgtgt gcttcagaaa      720
ggagcagggc ttagaaaaag cccttttctc cgtagagttg atgtggtgtg agtgatata      780
ttctatgttt ttaatgtcac gcatctgtac tttgtttgcc ttgataaagg taagataaat      840
gaaacgctga actatgctaa tctggaatth gtttttattt gcctgaaata tatttttttc      900
tgtgaaaaaa ttaaaacgta cttaagccag gagaatgaat tatacagtga ttgaaaatcc      960
atttaattcc tatgactttt gttttgtatt gcccaagtca aactacatca cttgtatctc     1020
cagcccaaat gtagtctgcc ttgaaaagtc ttccagctgt gactgcagga agtgggagtg     1080
tttttattgt tagctaattg ctgtgactgc aggaagtggg agtgtttctg ttgttggtc      1140
attgaagtta ttaggtcag cttcagtcac gtgtaagttt tgcagtgtaa tacatatgta      1200
gtctgggtctg tatatatgaa aatttgaatt aaactgcaga atgtttatgt ctagttatgg      1260
tttaaattht cttagtagta tataaaaggt aagagtactg aaaaattaat aaaattgcaa      1320
gttaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaagg aggggggggc      1369

```

<210> 113
 <211> 596
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (4)..(4)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (8)..(8)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (28)..(28)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (57)..(57)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (61)..(61)
 <223> n equals a,t,g, or c

<400> 113

ggaaccngc	tttgccectt	ggtttccnca	aagctcgaat	ttaccctcac	taaggnacc	60
naaagctgga	gctcccaccg	cggtggcggc	ccgctctaga	actagtggac	ccccgggct	120
gcaggaattc	ggcacgagtc	ctgacctcag	gtgatccacc	cacctcggt	tcccaaagt	180
ctaggattat	aggcttgagc	tactgtgccc	ggcccatggt	gtttttcttt	agggctcttc	240
ctacagcctt	gagaagtaga	taggcacatc	agtatggtac	tataggaatc	agaaaaattc	300
aaaacaaatg	tggattaagt	gttttaggctc	tatgtggctc	acgcagccag	aatccttaag	360
tctgtgtgtt	tctgtgtctc	aagactgggc	tcacattctg	gctttgtcca	taacaatgct	420
ctgggatttc	agggagttcc	ctcatttgta	aaatgagggg	gtcagagcag	gtgatatcca	480
tgtttctctc	ctttctgata	ttgttgtctg	tggcatattc	tttgtatggc	gaatttaata	540
aattatatta	atgtgtctct	ttgaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	ctcgta	596

<210> 114

<211> 629

<212> DNA

<213> Homo sapiens

<400> 114

ggcacgagaa	cctttggggc	tgacacaaga	tccttttagtg	tttgggatga	cctctttcct	60
gcagacttct	tccctatcc	ctaactcatg	catggaaaac	gtttgtcagg	ctggtttccc	120
gagcctcctg	cacctcaaca	tcacgctcac	ccttttgggt	ttagccagct	gttatttagc	180
aaatttctcc	agctgcaggg	aaggatcaga	gcactatctt	tttttttttt	tttttctcct	240
ggagccagga	ctgcacaagg	caatggccaa	atttagttga	attcagccta	ccatcctttg	300
ctgatgactc	agctctatgc	caagtactgg	agccacagag	atgggtcagt	cccagccctt	360
gtcctcagga	agcccatggt	cagggaaacg	ttgtagggat	aagtaataga	gggcagttgc	420
cttcaggggt	cctgggtggc	gctggtccct	atgggtgcct	gatgtgaatt	agaagacggg	480
gccctttcca	ggtggattca	gacctacact	agaacgcaca	gctttgggag	tgacacacag	540
gttggaattt	agcaccctt	gcccttggc	cagaggtgcc	ctgctgcacg	gccatacgt	600
gcagcctcga	gggacacaca	ggccaaagt				629

<210> 115

<211> 2497

<212> DNA

<213> Homo sapiens

<400> 115

ctgagccact	gtgccagcc	tcggctcagg	tttttcaata	cagtcttgac	cttggcattc	60
agtatcctca	cagcatgggt	ctaattaact	ttctagctct	atttcccttt	tcctgtcccc	120
tctctctaca	actagtcttt	ctctgattgc	cccgccctca	acctatctaa	actagacccc	180
agggaagcag	cttgggtcccc	ttcctctctc	ccactcacca	tccaaccaat	caccagagcc	240
tgtacattct	atattttcaa	catcgattca	attgtctact	tctttctagc	ctgccctctc	300
tgactgggac	tccttgagcc	agcctgatca	ccccaatcca	tccctcacac	tgtgcccate	360
tttctgaagt	aggaaatctga	tcacaccacc	ctgctaaaaa	cactctgggt	ctccccacgg	420
catgtggtgc	ccttgtatag	ctggcaaagc	cttgcatggc	acggccccag	cctgtgcttc	480
aactcaattg	cccagctctc	tccagctctg	ctgagccacc	taagtcacag	atggtttctc	540
ctctcatctc	tgctctcttc	catgtgccat	ttctgtggct	tggaaatgtc	ttccctcatt	600
ctctttctgg	ccctttcccc	tcacacctta	gacgtgcac	ttcctctcga	aaacctctag	660
tgaagcctcc	cagggccagg	cagtaccctc	ctctggcttc	ttctggatac	agaggaagaa	720
tctgagcatc	gattctccat	ctcagcaggc	ctctgtgtgc	ctgctgactc	cgactagacc	780
agagatccgt	aaggacaggg	atcgagtttt	ttttctttta	attcactgcc	tcaaaaatcc	840
tctgtgcatt	acctattcat	cctcttctct	cccttaacct	gaaccagtga	tcttactgtc	900
tccatcattg	tttttttctt	ttcttttctt	ttcttttttt	tttttgaggt	ggagtctggc	960
tcttcaccca	ggctggagtg	cagtgatgcy	atctcgactc	actgcaacct	ccatctcctg	1020
ggttcaagcg	atttctctgc	ctcagcctcc	ccagtagctg	ggattacagg	catgcgctac	1080
catccccaac	taatttttgc	ctccataatt	ttgccttttc	tagaatgtca	tacaggtgga	1140
attactcagt	atgctgcctt	tttcagattg	gcttctttca	cttagtaata	tgcttgtttt	1200
ttgagacagg	gtcttgtctt	gtcggccagg	ctagagtgtg	gtgggtgcgat	cttagctcac	1260
tgaacacctc	acctcccagg	ttcaagtgc	tctcctgcct	cagcctcccg	agtagctggg	1320
actacaggca	cgtgccacca	taccgggcta	atttgtggat	tttttagtaca	gacggggttt	1380
cgtcatgttg	gccaggggtg	tgttgaattc	ctgacctcaa	gtgatccacc	tgccctagcc	1440
tcccaaagtg	ttgcgattac	aggtgtgagc	cactgcgcca	agcctcattt	agtaatatgc	1500
atttaaactt	tctccatgtc	tttaatggct	tgatagctca	tttattttta	tcatggaata	1560

tttcattgtc	tggatggacc	acagtttatt	tctccattca	cctactgaag	gacatctcgg	1620
ttgcttctaa	gttttggcaa	ttatgaataa	agctgctata	accatcaagt	gcagggtttt	1680
gtgtggacct	attatcaact	aattcgggta	aatctcaagg	agtgcaattg	ctggatcaca	1740
cagtaagagt	gtgtttagtt	ttaagtggct	gtgccatttt	gcattccac	cagcaatgaa	1800
tgagagtttc	tggtgctcca	cattctcact	accattcggg	gttgtcagtg	ttttgcattt	1860
tggccattct	agtaggtgtt	tacatgggtat	ctagtcattt	gaatgggcat	atgatgtgga	1920
acatcttttt	ttttttaatt	ttattattat	tatactttta	gttttagggg	acatgtgcac	1980
aacgtgcagg	tttgttacat	atgtatacat	gtgccatgtt	gggtgtgctgc	acccattaac	2040
tagtcattta	gcattaggtg	tatctcctaa	tgctatttga	acatcttttc	atgtgtttat	2100
ttgccatctg	tatatcttcc	ctgatgagtt	ggggatgcat	tctttccatc	tcagagtccc	2160
cagaaactaa	catagcagtt	ggtagacagt	tgggtgctcaa	caaacatcag	cttaggaact	2220
atgtcctatg	tttttttgtt	tttttttttt	tttaaaaagg	aatgtgagct	gttcccaaaa	2280
cgtatgtcct	tccccatgc	ctctaccctg	cccttcacac	aactttctga	tcttcagcac	2340
acactacca	accatcaagg	ctgagacttc	ccgtggccag	cagtgtctca	tgctggcttc	2400
aagccccaca	gcactgcttt	tttcaacttc	tcttgtgggt	tagactgtct	ttagcccagc	2460
aagagaattc	gatatcaagc	ttatcgatac	cgtcgac			2497

<210> 116

<211> 1217

<212> DNA

<213> Homo sapiens

<400> 116

tctggaacct	ctctcttaat	tcatatttcc	cgtaagtctg	tccatctgtt	gtgtggaatc	60
tcagtttgtg	atattggata	gatgcaaata	agcaaagctg	ttacttttca	tagtttcaaa	120
tgaaaaactc	aacatcacta	ctgtataaat	tattttctag	tctatctgtg	tttattttta	180
aattcctttt	actattctat	acattgcaca	ttgctctggg	ggtaaaaatc	cartataaac	240
cattagctca	ttttattgac	cattcttgta	ttcagcaagt	atcccaagta	cagtgggtcca	300
taccttgaat	tttttttcac	tttttaagt	agatataatt	tacataccat	aacaacttag	360
tgggtttcag	ttatttcaaa	tacaagggtg	twcatatata	atcactgtct	aattccagaa	420
cattttattt	ttattttttt	tcagcagtgg	ggctctgcca	tggtgcccag	gctgggtctt	480
aactcctggg	ctcaagtgat	cctcctgcct	cagtctccca	aagtctctgg	attacagggt	540
tgcgccacca	caccaccct	caaaacattt	ttatttccca	aaaaagaaac	cccacatcca	600
taggcagttc	cacattccgt	tcttctctat	atccagctct	tggcagctac	tatagttkgt	660
tttctgtttc	tgtggatttg	tctattctgg	acatagcatg	taattggagt	catacaatat	720
atggcttttt	gtgcctggct	tctttcactt	agcataatgt	ttttaagatt	cattcatggt	780
gtagcattat	cagcactttg	tttcttttat	ggctaaataa	cactgcattg	tgtgsacata	840
ccacattttg	tttatccgtt	aatcagttga	tggatatttg	ggttgtttcc	acttcggggc	900
tattatggat	gatgcttctc	tgaatatatt	tgtacaagtt	tttgtgtgga	catttgtttt	960
tagttcactt	gagtatgtac	ctaggatgga	attactgggt	catgtggtaa	ctgttttaat	1020
ttcgtaggaa	ctgccaaatt	gtttcctaaa	gtggctacgg	tattttacat	tcccatcagt	1080
actgtatgac	agttccgttt	atccacatcc	actccaacac	ttgttgttat	ctgttttgat	1140
tatataatag	ctatttttagt	gggtatgaag	tcgtatttca	aaaaaaaaag	gaattcgata	1200
tcaagcttat	cgatacc					1217

<210> 117

<211> 529

<212> DNA

<213> Homo sapiens

<400> 117

acgcgtccga	ttacttacgt	gctcctggct	gggatggcac	tgggcattca	gaaaaggttc	60
tccccggagg	tgtgtggcct	gtgtgcaagc	acagcgtctg	tgtgggtggg	gatggagggt	120
ctggccctgc	tcctgggcct	ctacctggcc	accgtgcgca	gtgacctgag	cacctttcac	180
ctgctggcct	acagtggcta	caaatacgtg	ggaatgatcc	tcagtgtgct	cacggggctg	240
ctgttcggca	cgatggcta	ctacgtggcg	ctggcctgga	cctcatcggc	gctcatgtac	300
ttcattgtgc	gctctttgcg	gacagcagcc	ctgggccccg	acagcatggg	gggccccgtc	360
ccccggcagc	gtctccagct	ctacctgact	ctgggagctg	cagccttcca	gccccctatc	420
atatactggc	tgactttcca	cctggtccgg	tgacccccct	gccccagatg	gcactgagtt	480
tttcattcat	tgaagatttg	atttccctga	aaaaaaaaaa	aaaaaaaaaa		529

<210> 118
 <211> 1146
 <212> DNA
 <213> Homo sapiens

<400> 118
 cccgtccaca atgcagcaga ctcttcccaa ggccacctag caagcaaggt tgatcggatc 60
 atctaaactg gccgcctcct gaatatttca ctgaatcctg gcgttcattg tgaagcagac 120
 aaaatgagaa aggaggaggg cattgtctac ctctcaatag cttttttcgt tcaagttcta 180
 tgtctttatc agctcttgcc tgtgatttta cccaattca accttgggag tgggaagaat 240
 atgaacagat aacccttggc ctaacagctc catcaaacct ccttgagagc aactacctag 300
 gccaggctag tgagtgtctt gtgaggaagc tggtcagaag gtccctcaa ctccttcctg 360
 gtcctcctgg aactgcaga aaagacttag gggatcccca gcagaggcca attgctctcc 420
 ttccttcctt gcccaccag gaaaggaata acgtccacag acttgaagca gatagtgaag 480
 tagatctgtg agaggttcta ggtacttagt gtgtagactt tgacgaatat ttctcaagtt 540
 gggagccctt gttaaaaatg atgtttaagg gagtggttgg ggggaagatg aaggcatgga 600
 ggaggaagaa gagaaggaag cccttgccat ataaaattca tgcagactaa acagtttccc 660
 tgacagaata aataaagtgg atgctacccc actccagaat caaaagcaat ttaattaaag 720
 tctcttaagt tgtaagagt tttaaatgat ccgtgttgaa ggcgaatsct gcyaatgca 780
 gtgggtctga cgtcagctgc cgggcctggg ctgggaggcc atttgctatt ctgtttaagg 840
 caggctggat tgtcttattt tgaaccagc ttggtggggg gtttgctttg ctactgcttc 900
 tgagccctga gcttcaaagg ctgaaattaa tgggtgaacaa aattgtgcgg ctctggccat 960
 cccatgcggg caagcccatt gagggttatc attaaagtaa gaaataaaga gggggaaaaa 1020
 agcctgcctg ttccaaaaac ctcactcagat aatgacctca gtgattgggt tttcattacc 1080
 aaacagcatc cagagattat caaccatag aagaaggagg gggaaaaaaa aaaaaaaaaa 1140
 aaattc 1146

<210> 119
 <211> 1346
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (537)..(537)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (880)..(880)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (1115)..(1115)
 <223> n equals a,t,g, or c

<400> 119
 ggcagaggct tgtgaagggt aaagttaa cccctctgct tagccctgc ctccagcctc 60
 tgccaggagt aatgtgctcc catagtactc tgatccactt gtatttgggt cttccttttt 120
 tttttctttt ccttctctcc tcttttccct tcccttccty ttcctsttcc tccattcttc 180
 cctccctccg tcttctctca ttcttccctc cctccctatt cctccattct tccctccctc 240
 cctccctctc acatccttta ggactcagca tcacctctc taggcagtct ttcttggtat 300
 accaccaytt atgcacaaaa cacctaagca ytaccttatg tggcctcatt tatcactgct 360
 taaatatatt ttawacacgt gctgtgatgt ggcacatgca ggtgtcattc ttgagkatcc 420
 actggttatt gccttgaggg gatgacaact gcccggtagg gtvacctggg gtgactgcac 480
 ctaaaacagc aataccaaag ggccattgac cagtctctgc actgaccagc tggggcctct 540
 gagtatatcc cttaaccact ttggacctta atttggcctc tgtcaaatga gatgggtggaa 600
 cttgaggaac tctaaggccc ctactgtgca ggtcttatta atgattacaa cagcagcagc 660
 agccagtgtt tactgaggac ttacaaagca ccaagcactt tgcctatcct aatccttaca 720

tcaactctac	gaagttagta	tggttactat	ccctatttta	cagatgagga	gactaaggct	780
aagagagggt	atatgacttg	accacaaggt	cataataaag	aaacagattt	gaatccaggc	840
attctgactt	tactgttctt	agccacataa	tgggcacasn	ttygacacac	rgttttgtgt	900
actgtttggt	ggcactcac	agactccatc	ccagactctg	catgaaccat	ccctgttcta	960
catttttaag	gctcaaactg	gagtcctggg	gaaacctggg	gacagaagac	tgctatagtc	1020
acaattatta	gagggaaatg	ggtgaggacc	agtggccagc	tctgttcatg	aacctttgac	1080
aattctcaca	gagagtcttg	ctttggacag	agacnactta	cgttgctggt	ttcagttacc	1140
ctcttttagga	ggggagagta	ggcctgagtc	atgcttcaga	cacagattaa	aatcagattt	1200
ggtaccagggt	gcagtggttc	acgcctgtaa	tcccagcact	ttggggaggct	gagttaggag	1260
tatcacttga	ggccagaagt	ttgagagcag	cctggggcgac	atagtgagac	atcctctctc	1320
tttaaaaaaa	aaaaaaaaaa	actcga				1346

<210> 120

<211> 1079

<212> DNA

<213> Homo sapiens

<400> 120

ggcacgaggt	gtagaaaagt	tttcgaagca	gtgtgagtc	tgtacctttg	tggtcctgtc	60
tcacagacac	ctgtctattc	cctgaccctt	ttaaatgcta	actttctgcc	tgtaggaaat	120
cttccttttg	tgcttaggtc	ttttcttctt	gtgagcttta	gataaacaac	ctagtgttta	180
aactttttta	taagggattc	attttttaat	acatgagaat	tcattttcaa	attttggttt	240
tagttattta	ttttattcta	cttggtctct	tttcagacag	atgttctctc	ctggattgta	300
aaagtccaat	tcaaaggatt	tttatttgta	atatacttaa	cctttctctt	gtaagttgcc	360
atctgtgtag	atacagcttt	gattgcctga	caagaggaaa	atgtttccca	ttatcttttc	420
ctgcctgaac	tatacggcca	cttgtgttcc	agcatagtg	ttcttaaccc	tcatagtgtg	480
tcagaatcac	tttgacagac	ttttaaaaac	tctagatgcc	tgggggaccac	cccaaagact	540
ccattttggt	gtcatgggtc	aaagcacagt	cttctagttt	gcagctagtg	ttgagtacaa	600
ctagagttta	accaggttga	atttttagtt	aatcttggtc	ggtcttgaag	atgttagtaa	660
tctctattca	tttttttkga	aaagtaccaa	tgaratcaga	aagttaatta	gaaaacatct	720
agttgaatcc	cctgttttta	atagatgggg	aaaccaagac	ccagagaata	taatccaaag	780
ctacctgtca	atacggccac	aatttctttt	caaatattct	gttcttcgct	gttcttctaa	840
tttgacgaac	tcctctttta	aaaacctttg	gagaatgtat	tggcctcata	ccctcttctc	900
tcagcctgaa	agacatgcac	ctgtcactta	tttatgatat	ttaaatgcaa	cctctagaac	960
aggggtgtcc	aatcttctgg	cttcctctgg	ccacattgga	agaagaaatg	tcctggggcca	1020
cacataaaat	acactaatga	tagccgatga	acttaaaaaa	aaaaaaaaaa	aaactcgta	1079

<210> 121

<211> 2103

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (2101)..(2102)

<223> n equals a,t,g, or c

<400> 121

ttcctcgtag	cgagcctagt	ggcgggtggt	tgcattgaaa	cgtgagcgcg	acccgacctt	60
aaagagtggg	gagcaaaggg	aggacagagc	cctttaaaac	gaggcgggtg	gtgcctgcc	120
ctttaagggc	ggggcgctccg	gacgactgta	tctgagcccc	agactgcccc	gagtttctgt	180
cgcaggctgc	gaggaaaggc	ccctaggtctg	ggtctgggtg	cttggcggcg	gcggcttctt	240
ccccgctcgt	cctccccggg	cccagaggca	cctcggcttc	agtcagtctg	agcagagtat	300
ggaagcactt	gactacgaat	gctatccgtg	cgagaacagc	tattccacga	gaggatccgc	360
gagtgtatta	tatcaacact	tctgtttgca	acactgtaca	tcctctgcc	catcttctctg	420
acccgcttca	agaagcctgc	tgagttcacc	acagggtgtc	ctgggcccgg	tctmtgagac	480
agtggatgat	ttgatgtctc	tcactctgct	ggtgctaggt	atgggtgtgg	tgccatcagc	540
cattgtggac	aagaacaagg	ccaacagaga	gtcactctat	gacttttggg	agtactatct	600
cccctacctc	tactcatgca	tctccttctt	tggggttctg	ctgctcctgg	ctgctggaag	660
acctggagga	gcagctgtac	tgctcagcct	ttgaggaggc	agccctgacc	cgcaggatct	720
gtaatcctac	ttcctgctgg	ctgcctttag	acatggagct	gctacacaga	caggtcctgg	780

ctctgcagac	acagaggggtc	ctgctgggta	tgtgggttcg	tagggcttgg	gatacctggg	840
tttccccaag	gagagtagcc	cctgggtcca	ggtgcttgct	gacagcctcc	catccctgca	900
cagagaagag	gcggaaggct	tcagcctgkc	aacggaacct	gggctacccc	ctggctatgc	960
tgtgcttgct	ggtgctgacg	ggcctgtctg	tgtcattgt	ggccatccac	atcctggagc	1020
tgctcatcga	tgaggtgccc	atgccccgag	gcatgcaggg	tacctcctta	ggccaggctc	1080
ccttctccaa	gctgggctcc	tttggtgccg	tcattcaggt	tgtactcatc	ttttacctaa	1140
tggtgtcctc	agtgtgtggc	ttctatagct	ctccactctt	ccggagcctg	cgccccagat	1200
ggcacgacac	tgccatgacg	cagataattg	ggaactgtgt	ctgtctcctg	gtcctaagct	1260
cagcacttcc	tgtcttctct	cgaaccctgg	ggctcactcg	ctttgacctg	ctgggtgact	1320
ttggacgctt	caactggctg	ggcaatttct	acattgtgtt	cctctacaac	gcagcctttg	1380
caggcctcac	cacactctgt	ctggtgaaga	ccttcactgc	agctgtgcgg	gcagagctga	1440
tccgggctct	tggtctggac	agactgccgc	tgcccgtctc	cgggtttccc	caggcatcta	1500
gggaagccca	gcaccagtga	cctccagctg	ctgggtggaa	ggaaaaaact	ggacactgcc	1560
atctgctgcc	taggcctgga	gggaagccca	aggctacttg	gacctcagga	cctggaatct	1620
gagaggggtg	gtggcagagg	ggagcagagc	catctgcact	attgcataat	ctgagccaga	1680
gtttgggacc	aggacctcct	gcttttccat	acttaactgt	ggcctcagca	tggggtaggg	1740
ctgggtgact	gggtctagcc	cctgatccca	aatctgttta	cacatcaatc	tgccctactg	1800
ctgttctggg	ccatccccat	agccatgttt	acatgatttg	atgtgcaata	gggtggggta	1860
ggggcagggg	aaggactggg	ccagggcagg	ctcgggagat	agattgtctc	ccttgccctc	1920
ggcccagcag	agcctaagca	ctgtgctatc	ctggaggggc	tttggaccac	ctgaaagacc	1980
aaggggatag	ggaggaggag	gcttcagcca	tcagcaataa	agttgatccc	aggggttgct	2040
ttgttttttt	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	2100
nna						2103

<210> 122

<211> 1212

<212> DNA

<213> Homo sapiens

<400> 122

gccaagcttg	gcacgargtt	ggtggcgggc	tccggagggtg	ctgggtttgtt	ctcgggtgaac	60
ggcgcgcggg	gtctctcctg	agtgcgagct	acgggacctt	cgccatgccg	gggatggtag	120
tcttcggccg	gcgctggggc	atcgccagcg	acgacttggg	cttcccaggg	ttcttcgagc	180
tggtcgtgcg	agtgcctgtg	tggattggca	ttctgacgtt	gtatctcatg	cacagaggaa	240
agctggactg	tgctgggtgga	gccttgctca	gcagttactt	gatcgctctc	atgattctcc	300
tggcagttgt	catatgtact	gtgtcagcca	tcattgtgtg	cagcatgaga	ggaacgattt	360
gtaaccctgg	accgcggaag	tctatgtcta	agctgcttta	catccgcctg	gcgctgtttt	420
ttccagagat	ggtctggggc	tctctggggg	ctgcctgggt	ggcagatggg	gttcagtgcg	480
acaggacagt	tgtaaacggc	atcatcgcaa	ccgtcgtggg	cagttggatc	atcatcgctg	540
ccacagtggg	ttccattatc	attgtctttg	accctcttgg	ggggaaaatg	gctccatatt	600
cctctgccgg	ccccagccac	ctggatagtc	atgattcaag	ccagttactt	aatggcctca	660
agacagcagc	tacaagcgtg	tgggaaacca	gaatcaagct	cttgtgctgt	tgcatgggga	720
aagacgacca	tactcgggtt	gcttyttcga	gtacggcaga	gcttttctca	acctactttt	780
cagacacaga	tctggtgccc	agcgacattg	cggcgggcct	cgccctgctt	catcagcaac	840
aggacaatat	caggaacaac	caagacctgc	ccaggtgggc	tgccatgccc	cagggagctc	900
ccaggaagct	gatctggatg	cagaattaga	aaactgccat	cattacatgc	agtttgagc	960
agcggcctat	gggtggsccc	tctacatcta	cagaaacccc	ctcacggggc	tgtgcaggay	1020
tgggtggtgac	tgaaattagc	tggacatggg	tgcacacacc	tgtaatcaca	gctactcggg	1080
aggttgaggc	gggagaatcg	cttgaaccag	ggagttggag	gttgacagta	gtggagatca	1140
caccattgcc	ctgcagccta	agcaacagag	caagattctg	tctcaaaaaa	aaaaaaaaaa	1200
aaaaaactcg	ag					1212

<210> 123

<211> 616

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (17)..(17)

<223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (580)..(580)
 <223> n equals a,t,g, or c

<400> 123
 cmgctrctra gcaactnagt gggatscccc gggctgcagg aattcggcac gaggagaacg 60
 gctgcacgtg ggagatgctc cgtggatgtt tgtagaacgc tggcttccgt gtttcctcgt 120
 tgtggctgtg gtgggtgtggg tctttgcctg tggacccgtg gaagacaaag aagacagttt 180
 tggatggtca agctattttc ttgcttcagg gtcacctccc ctgctttttg aagcctcaca 240
 aaccaggact gtgagggcag gaaggcttgg ggtctttgtg tgctgagcct cattagggtt 300
 ttaagaacct ccctcctttc atctctagct tacgagaggg atgattcatt atcttccctc 360
 ctgaggtgc agtagaagca gacagtctct gcctccctgc ttgcctttcc tccctcccat 420
 tctactgtga ttattgccct caagaataac aggttgccca gctactcgag argcttaagt 480
 gggaggattg cttgacccca ggagttcgag gctgcagtga gctatgatcg cttcactgcg 540
 ctatagcctg cgagacacag agagacccta tctcaagcan acagacaaac aaaaaaaaaa 600
 aaaaaaaaaa ctcgag 616

<210> 124
 <211> 536
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (536)..(536)
 <223> n equals a,t,g, or c

<400> 124
 ggacgagtgg ggagctggaa ggaggatgga gtgggaagat aatcttccct tggagttcag 60
 ctgtcccgtg accaaactcc tctctgtccc cagctggact cctctagatg ctcagatgct 120
 ccttctcttc ttctcttctc tgtcacacca ttcttctgtt ccttggctct tctgctcatc 180
 tccttgtgga gscawaggtt tggggtttat atgagtacag gataggtgac atgggtggatc 240
 aaaaggcaac attttgtgtg caaaaacagg aatgcctgtt cccattaggg tcatgggttk 300
 ccagggttga ggggtggggcc ttgtctaggg aaccaccctc ttctaccagc tattttcctg 360
 tctctgtct gtatcaatag gtacacaata twtattaaat taatkaatga ctatacat 420
 tgaaatggga aatgcaaggt ataaaggaga attgctgtcc ttgaaaagaa atttagtttg 480
 tttttttgtt gagatggagt cttgctctaa gctagagtgc agaattgtaat caaggn 536

<210> 125
 <211> 796
 <212> DNA
 <213> Homo sapiens

<400> 125
 ggcacgaggt gacgtgtttc tgcattgttt gccatgacaa gctccctgct tcacccattg 60
 ctgtatcccc agcacctctc tctactgctg gcaagggaaa gcaactcagaa gacgtgaat 120
 gaccargtag agtgatgggt tgtacagcac tgttactcct ttcccatctc tgtgtcccat 180
 gtgaacctta tggcaccatc gagaaggagc ttgtaccagg ttctactctt ctagtttaca 240
 gatgagaaaa caggatcaga gtggtacaga tatttgtcta agtcacagag aaagtgaatt 300
 gtaaaagcag aaacagagca caggctgcct gacttctagt ccagtgcctt ttgctcaaat 360
 tgcctcttat ttctcagggt attcttgaaa tggcagatgg ggattctgtt taatgaaaca 420
 aaagtgacaa ttctttcttt cttggagaga aggtggagac aggggtctcac tctatcacac 480
 aggtctggagt gcagtggctc aatcatggct cactgcagcc tcaatctcct gggctcaagt 540
 gattcttcca ccttagcctc cttgactcac tgggactaca ggtgcacacc accatacctg 600
 gctaattttt aaagtttttt gtgagagacag ggtctcacta tattgtgcat tctggtcttg 660
 aactcctggg cccaagtgat cttctgcct cggtcttcca aagtgtgga attacaggca 720
 tcaccccat gcctagcctg aaaattcttt ctatgtcctt aacatcttct ttcccagtat 780
 ttctccatcc actcga 796

<210> 126
 <211> 1037
 <212> DNA
 <213> Homo sapiens

<400> 126
 ggcacgagct cgtgccraat tcggcacgag ggtcatagtc cacagaggta aaagttaaca 60
 attctgatgc tcttgatgt gcataccaga ggctctaggg aagaattccc tctttctttc 120
 ttccaccttc ttgtggctgc tggcattctt tggcttggtg tcacatcact cctatcttga 180
 aggccagcat cttcaaatct gtttcttctt cacatagcct tctgtgtgtg cagtgcctc 240
 tacctctctc ttataaagac atttgtgatt aaatggaggg tttaggataa tctcgtcaag 300
 atccttaact taatcacacac tgcaaaaacc tctttcccaa ataaggtaac attcacaggt 360
 tccagggatt aggacctatt atctttggta agtattattc agcctaccac aatagctaaa 420
 acaattctga aaaagaagaa taaagtgaga gaaatcagtt tatctgattt cgatacttat 480
 tgtatagcta tggtaaataa ggctgcatgg tattaaagaa aggacatata tgaatgaaac 540
 agaatagagg acccagaaat agaccacac aaaggagccc aaattatttt taaccaaggt 600
 agaagacaat ttattggagg aaagacagcc ttttcaacaa atgggtactat aacaattaga 660
 tatccatagg caaaaaaaaa aaaaagaatc ttgatctaag gctcacacct tatataaaat 720
 aatattaaac tcatggccag gcacagtgc tcatgcctat aatcccaata cactggggagg 780
 ctgaggcaag agtatcactt gaggccaggg gttcaagact agcctgggca acacagtga 840
 actctatctc tacaaaaaaaa ttataaacta gctgggcatg gtggcacatg cctgtagtca 900
 caactactca cgaggctgag aagatcactt aagctgagtt gttcaagggt ctaatgagct 960
 acaatcgtgc cactgcactc cagcctaggt gacagacaaa gaccccatct caaaaaaaaa 1020
 aaaaaaaaaa actcgta 1037

<210> 127
 <211> 841
 <212> DNA
 <213> Homo sapiens

<400> 127
 gggctgcagg aattcggcac gagctcgtgc cgactctcag agcaggggaac agcgggggaa 60
 aatgtttaca ctccatgcac aatctgtgct tccagtccct caccctatgt ggcccaatag 120
 ctggctggat ttcacactta atttggtatt ttttctgect tcttcccctg cccccactga 180
 ctccctctct ctccctttga ttgtactcaa ggttctgggg cctgggcccct ggggtgggtac 240
 caacagctgc tcgctgttcc catgtcctct ctccagcttt gctgtgtttc tctgctacct 300
 aatctcagtg actgtgaaag gacattgtgt ctgagccatg gccagccgct ggttggcccc 360
 ctgatctgcc ccccttctat tgtttggatg gccatctcct gctgggcctc cctgactgta 420
 aaatctctgt actgtttgtt aggtttttgg tgggaggctg tgataagttc caatgagctg 480
 ccacttccct ggatatgtca agaagctgat ggcaacttgg ccaattctgg cagatatcag 540
 gccccagtt cagccccagt caccctcttt tacacatgtg ggtcaaccac tgtgtgctca 600
 gagggctcag cccttccctc gctgtgtttt tcttgagtc ttgcactcac ttcccctgcc 660
 ccagtcacga tgacccttaa agcttccctt gcccttgctt tctagggcat ccctagtga 720
 ggggcaaacc tgagatttct cctgtgacct gacagccaag gcagggcact gtctcctgag 780
 gccagtgcc aacgtgcat ggttcacaga aaaggatcct gggctcagaa tctcgagggg 840
 g 841

<210> 128
 <211> 2128
 <212> DNA
 <213> Homo sapiens

<400> 128
 gtctacctcc gggctgaaac gtcaccatgc ctccccacag acagacggat ggacagatgg 60
 gcctccctgc acctgctctg tgggtgtggg ggctcctgct cagcagcagt ttccagacct 120
 ttctccctgc tttccccaag ccaccgcct tgaatctggg gtgctctacc agaccatcc 180
 cctcatttct aaagatttga gccactagtc gtgtccctct cctcagaaa tgccttgggt 240
 acacttggct gctttcaact ctccaccca ctgacctct ggtctcatct ttacctctg 300
 ctaaagggtc tgacccccac ccccgccacg ccatggggca cccatgggtg gtgcgtcctt 360
 gggagcagct ctgtcccttt ccccggtggc tttgccccgc ctectatgac ttcgattccc 420
 acctgtcccc gaccctggg accactgacc gggcccgatc accctgtcac tgccctgtca 480

tctgcttacc	ccacacggtg	ctctgctgac	ccaggtcttg	ctgtctccca	acagccccac	540
gaggcttccc	gtcgctcctg	gacactgcag	gctgagcccg	ctgccccgcc	gcctccatga	600
ggaaggcttt	tctctgtgta	gccccaggcc	accctttccc	tcctttaagt	aattacttaa	660
gtcccttgcc	agggccctcc	cagtaccctt	tctaaagaca	cccctgcccc	agcatgctgc	720
aggctcctgc	tccactttcc	tctcaggccc	tcgtcgctgt	ggtgctgcct	ttgttttctg	780
tctctgccac	ggcagggggt	cagctccttg	gaggtggggc	ttctgccctt	gctgtaccac	840
tgccctggcac	acagtaggtg	ctcaataaag	acttgccagg	tgagctgcct	gaagaatagt	900
caccagaggc	cagaaatgtc	tagagctctg	ccggtagggt	gactggccga	ggagcctggc	960
ctgcatgtgt	gcgtgtgtgt	gtgtgtgtgt	gtgtgtgtga	gtcagggttt	atatgcaggt	1020
gtctacagga	gacatgctgg	gttctgtgct	gggtgtgagg	aatatgggag	cagaacccca	1080
gggaggtggc	agagacttgg	gggcaaaagg	gctgggggtg	aggggggcaa	cagccagggtg	1140
ccactggcca	ccccagccgc	agggagccct	gcccaccctc	caggtgcctg	gatgtccaac	1200
ctcactgtcta	ttcccacctc	aagccaggcc	tggagatgga	ggcccatga	ctcagccagg	1260
gccggtttgc	ggacccggtc	gacccagacg	ggcgggcagc	ccccagcccc	cgggcctgca	1320
cccaggacag	ggcgcgccct	cctccctccc	ccgcttcttg	ctcctaggac	aggattctct	1380
gaattcagct	cccctgaggc	tggggccagg	ttggaggcca	ggcctggggg	ctctgggctg	1440
gggtcccaga	taggggctgg	gcggccaggc	ttggaatctg	gaatccagcc	ccattcctgg	1500
catctgcagg	agcctcgtgg	ggagggagac	ttgggatgga	cttcaaccag	ccagggctgg	1560
attcttggcc	cggaacctgc	attcctgggg	cagccaaggg	atccttccca	cttctggggc	1620
cagcttggcc	ctgcctggca	ttcgaggccc	atctggggct	tgggggtgtc	tccccaactc	1680
tcagacataa	ggacaccctt	ccaagcttgt	tccttcacct	ggcggggccc	tgagccccac	1740
accctcctcc	tgtcctttct	ccatccgaca	tcaagcgctc	ccctgcctct	gctcgcacag	1800
tctctgagat	ggggaactca	gcacctcaca	ggtgggcccc	gctctgggtg	tgtctgtgtt	1860
gggggagctg	gggcagcccc	caaaagacct	tggagacaga	ccctcagagg	caggagcaga	1920
ggctggcagt	ggatgctgtg	cctggaggcc	ttgagggcga	ggtgtgatga	tgaggcccag	1980
gctgcagggc	tctttctggc	tctccagctc	cggagaacaa	gggatttcct	cctgctctgc	2040
ccaccctccc	cagccagtgc	atgctcagcc	tcagcaccgc	acctgggcgc	cctccatgat	2100
ctgccccacc	tggacacatg	gctcgagg				2128

<210> 129

<211> 748

<212> DNA

<213> Homo sapiens

<400> 129

ggcacgagcg	aaactgtttt	ccaatgtggc	tgaaccactc	tgcatttcca	ccagtaatga	60
gaatgagagt	tgctgttgct	ccacggcctc	accagcattt	ggtgggtgtc	gtgtcttgga	120
ttttagccat	cctaataagt	gttagtggtc	atcattgttt	tcatttgcga	ttctcttaca	180
tgggtgkga	catctttccc	catgtttatt	tgtcatctgc	atatcttctt	cggccagtta	240
tctgttcaga	tcttttgccc	gtttttgttt	gcttgcattg	ttgtttgtgt	ttgatttttt	300
aaagaaagct	ttttttatta	ttgagttgta	atagtgcttg	tatagtgtgg	ataacagttc	360
tctatcagat	aggctctttg	caaataattt	ccccaatctg	tggactgtct	tctcattctt	420
ttgataaatg	gctttaaaa	aataatctgg	ccgggcgcag	tggctcatgc	ctgtaattcc	480
agcacttttg	gaggccaagg	gcagatcatc	tgaggctcgg	agttcgagac	cagcctgacc	540
aacatggaga	aaccccatct	ctactaaaa	tataaaatta	gtcgggcgtg	gaggcacatg	600
cctgtaatcc	cagctacttg	agaggctgag	acaggagaat	ctcttgaacc	cgggaggtgg	660
agggttcagt	agcccgaaat	cgtgccactg	tattccagcc	tggacaataa	gagcaaaact	720
ccatctcaaa	aaaaaaaaaa	aactcgag				748

<210> 130

<211> 297

<212> DNA

<213> Homo sapiens

<400> 130

ggcacgaggt	gtgtttgtgt	gtgtgtgtgg	tgtgtgtatg	tgtgtggtgt	gtgtatgtgt	60
gtgtgtgtatg	tgtgtgtgtg	gtgtatgtgt	gtgtttgtgt	gtgtgtggtg	tgtgtatgtg	120
tatttctttg	aatgagaaat	tggctcccat	gattatggag	ctgacaactc	ccaaggctctg	180
caggcagcaa	gctggaggcc	caggagggcc	ggtggtgtgg	ctgcagccag	tgtctgaagg	240
cctgagaacc	aggagggcgg	gtggtgcagc	tgcagtgtga	aagccggcag	gctcggaa	297

<210> 131
 <211> 1894
 <212> DNA
 <213> Homo sapiens

<400> 131
 ggcacgagca gtctacctgg aaattgtcac attatacaaa tgtcaacttt tgtgtgtgtg 60
 tgtgtgtttt gttttgtttt gcggtcagag gcaagggcta aaagaaagca agatcagaga 120
 aataccaaga ggtgtttact gactaaaggg caaagggatc tatcagttaa ccaaagcaag 180
 ataaatagaa ctgccaatga acttttatatt ctacagaagca gtgagcaaaag aacgctgcct 240
 gaacaatgaa agtgttgctg caactttcat atttgctgtt gtctgcatgt aatttgtttc 300
 cttttacata gaaatatgtg gtattaacag agggatgtga ttagaatacc agcggaaagct 360
 ctctttgata ggagacacac aggcagggtgc ctaacagcct atggagatca ggacagtttc 420
 tctccagtaa actcacaat tgtggggacc atgatctgct taataagtaa aagggcaatg 480
 gggccaagat tacaatgttg aaaacatcca ggcttccac ctggagtcct ggctcacag 540
 taataataag aataaagatg tattgagata tatctagacc taactatata aatagacaga 600
 tagatataca cacatacaca cactgtgcta agatgcttca catgaactcc ctcatctcac 660
 cctcaacaa ccacagggta gatgggttat caccgtttta gagataagaa aactccagtt 720
 agtacgtcac tgaagatcta cacagtgcg tagatgttgt gatagacatt tcttaaaaa 780
 attccaatta atcctcagaa cactgtgag aagtatacta aatatactaa gctccatttt 840
 atgaatgagg aatcagagtc aaggagacga gataacatgt cccaggtgac ggtattagcg 900
 gtcatagcag gatttgagcc cagctctgtc tgtcttcaaa actcatgttt aggagactct 960
 tctgctttcc accaaagccc ttgatttgaa cctttgctct ctctgaatc cacacttctc 1020
 ctgaaggagg agcaagggtg agatgggata gggcacagga tggctgactc tctgactgga 1080
 gggcctaaga aacccacat tgacacacac acagaaaact gtgccctggg tgggggtgtg 1140
 gggcttcag agaaaatcaa gtagcaagag agagtcttaa catgcttaga tggcatgtgc 1200
 ctgttctcct gatttaattg atgagaaaac tgagatccag ggcaagggca gtgagatagt 1260
 gagggctct tagaatgagt acagccttca gggaccacc ccatgtaccc gtgggatcaa 1320
 gacgagccag aggatacctc ctaagtaaga acagaaggaa cagaaaaccc ttaaggtttg 1380
 ttgttgttgt tgtgacagaa tctcgctctg ttgcccaggc tggagagcag tggcacagtc 1440
 tcggctcact gcaacttctg cctcccaggt tcaagcgatt ctctgcctc accctccga 1500
 gtagctggga ttacaggcac ccgccaccat gcctggctaa tttttgtatt ttttaatacag 1560
 acgaggttcc acaatgttgg ccaggctggg ctcaaaactcc tgacctcaag tgatccacc 1620
 acccggcct cccaaagtgc tgggattaca ggcgtgagcc accgcacctg gcctgaaac 1680
 acgtatcata cttgctatgt gccagacaca attctaacca cttttccaca gattaactca 1740
 gccttcaaac aatcctaaaa agtaggtatg attatttcct gcattttaca gccaaagaaa 1800
 ctgaagcaca gagagattaa gaggacttgt gcaaggctat ggagggctat agtcctaccc 1860
 tctgaagtaa gttaaacctt ctccagaaaa agcc 1894

<210> 132
 <211> 1355
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (1327)..(1327)
 <223> n equals a,t,g, or c

<400> 132
 gccctgctg gatggcactg tgggtaacct gcataccttc actgtgcaca tggttctcat 60
 gcctttacgg agcagactcc ttggcaaata aatgcctcag tgcaggagcc acacgcaagg 120
 catttccctt ctgtgtcctc tttcgtgatc ttgaggtggg acttgggttt gaaggctttg 180
 tcaactcact ggcagtcaaa ctcttttgtt atttgtgaact ctctgacagt gctttaagtc 240
 tggggcacga ataaataatt ttccacacag ctcaactg tagggcttac atccagtgtg 300
 tgtgcgttat gtctgtgtgt gtatccttat ttttttgaga cggagtctcc ctctgtcacc 360
 caggctggag tgcatggcg cgatctcggc tcaactgcaac ctccgcctcc tgggttcaaa 420
 cgattctcct gcctcagcct cccagtagc tgggattaca ggcaccacc amcacgcctg 480
 gctaattttt gtatttttag tagagatggg gtttctccat gttggtcagg ctgggtctga 540
 tttcctgacc ttgtgatccg cctgcctcgg cctcccaaag tgctgtgatt ataggtgtga 600
 cacaccacac ccggtcctgt gtatgttttg agacggagtc tcaactctgtc acccaggctg 660

aagtgcagtg	gcaggatctc	ttctcactgc	aacctccacc	tcctgggctc	aagtgattct	720
cctgcctcag	cctcccaagt	agctgggtatt	tcagacttgc	accatgatgc	ctggctactt	780
tttatatttt	tagtagagac	ggagtttcac	cagcctgggc	tcgaactcct	gacctcaagt	840
gatccaccca	ccttggcctc	ccaaagtact	gggattacag	acatgagcca	tcacgcccgg	900
cccctaagtg	gatttttagg	cattctttca	ggtgggcctc	tgtggtgaaa	ccttttctgc	960
acatttcaca	aacggcttct	ccgctgtgtg	gcatttctca	gctttctcca	ctgccttcac	1020
aggaaacttc	ttcccgcact	cctggccgac	gtcgctccct	aggtgactgt	gctggcaaaa	1080
ctcagacctc	aggacactgg	tggctgttgt	ccagcctagt	gtctgcttac	cccgcactca	1140
tcccgtagtc	acacgtgaag	gcttgagggg	tctggaactt	cctggccgta	gcaatggact	1200
ttctgaactt	tcttctctct	tcagaattgc	gttttgacct	tgagtgtggt	cgtagggtag	1260
tcgccggcct	cccgcgccgg	ggtgtggtgc	ctttgttctg	agtcatacaca	agtgccatca	1320
tcctgancct	agcwtctttc	agatcaccct	ctcga			1355

<210> 133

<211> 1382

<212> DNA

<213> Homo sapiens

<400> 133

cccacgcgtc	cgctgaattg	cggccgtatg	cgcggctctg	tggagtgcac	ctggggtttg	60
gggcactgtg	ccccagccc	cctgctcctt	tggactctac	ttctgtttgc	agccccattt	120
ggcctgctgg	gggagaagac	ccgccagctg	cttgagtttg	acagcaccaa	cgtgtccgat	180
acggcagcaa	agcctttggg	aagaccatat	cctccatact	ccttggccga	tttctcttgg	240
aacaacatca	ctgattcatt	ggatcctgcc	accctgagtg	ccacatttca	aggccacccc	300
atgaacgacc	ctaccaggac	ttttgccaat	ggcagcctgg	ccttcagggt	ccaggccttt	360
tccaggtcca	gccgaccagc	ccaacccctt	cgcctcctgc	acacagcaga	cacctgtcag	420
ctagaggtgg	ccctgattgg	agcctctccc	cggggaaaacc	gttccctggt	tgggctggag	480
gtagccacat	tgggccaggg	ccctgactgc	ccctcaatgc	aggagcagca	ctccatcgac	540
gatgaatatg	caccggccgt	cttccagttg	gaccagctac	tgtggggctc	cctcccatca	600
ggctttgcac	agtggcgacc	agtggcttac	tcccagaagc	cggggggccg	agaatcagcc	660
ctgccttgcc	aagcttcccc	tcttcatcct	gccttagcat	actctcttcc	ccagtcaccc	720
attgtccgag	ccttcttttg	gtcccagaat	aacttctgtg	ccttcaatct	gacgttcggg	780
gcttccacag	gccctggcta	ttgggaccaa	cactacctca	gctggctgat	gctcctgggt	840
gtgggcttcc	ctccagtggg	cggcttgtcc	ccactagtc	tgggcatcat	ggcagtggcc	900
ctgggtgccc	cagggtctat	gctgctaggg	ggcggcttgg	ttctgctgct	gcaccacaag	960
aagtactcag	agtaccagtc	cataaattaa	ggcccgtctt	ctggagggaa	ggacattact	1020
gaacctgtct	tgtgtgcctt	cgaactcttg	gaggttggag	catcaagttc	cagccggccc	1080
cttcactccc	ccatcttgc	tttctgtgga	acctcagagg	ccagcctcga	cttccctggg	1140
acccccaggt	ggggcttccc	tcatactttg	ttgggggact	ttggaggcgg	gcaggggaca	1200
gggctattga	taaggctccc	ttggtgttgc	cttcttgcat	ctccacacat	ttcccttgga	1260
tgggacttgc	aggcctaaat	gagaggcatt	ctgactgggt	ggctgccctg	gaaggcaaga	1320
aaatagattt	attttttttc	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	1380
aa						1382

<210> 134

<211> 791

<212> DNA

<213> Homo sapiens

<400> 134

cccacgcgtc	cggttctcct	gcttgccatc	aatggagtga	cagagtgttt	cacatttgc	60
gccatgagca	aagaggaggt	cgacaggtac	aattttgtga	tgtggtgccc	gtcctctcca	120
ttcctgggtg	tatcctatct	cttgaccctg	tgggtgggca	gcgtgggctt	catcttggcc	180
aactgcttta	acatgggcat	tcggatcacg	cagagccttt	gcttcatcca	ccgctactac	240
cgaagagccc	ccacaggccc	ctggctggcc	tgcacctatc	gccagtccct	ctcgggacat	300
ttgccctcag	tgggtggggt	actgctgttt	cggaggtatt	cctctgctgt	gagcagggct	360
ggccagccag	actggcacac	attgctgtgg	gggccttctg	tctgggagca	actctcggga	420
cagcattcct	cacagagacc	aagctgatcc	atttcctcag	gactcagtta	ggtgtgcccc	480
gacgcactga	caaaatgacg	tgacttcagg	gaagcctgga	cacccgaggc	acctggacca	540
gctatgggta	gttctgtggg	tgggaacacat	tctgtgtaag	agccccactg	agggtctctg	600
agcggagtga	cagcaacccc	agagatgagg	caccagagag	tgccactgca	tgagacacct	660

```

gtgaccattc gaagtctgaa atgcgggggg ggagtttcat ttttaagtga agacccaaaag 720
ccctttaaaa ataatagttt tttatcattt tatagtaaaa aaaaaaaaaa aaaaaaaaaa 780
agggcggccg c 791

```

```

<210> 135
<211> 2163
<212> DNA
<213> Homo sapiens

```

```

<400> 135
cgccacgcg tccgaggcgg cggagcccga gcccaccca gtgcggagcg cgccgcgagc 60
cccgcgyaa gctgagcgcc tccgcccgc aggcgcgcgg gcgcggggcc atgtactcgg 120
ggaaccgcag cggcggccac ggctactggg acggcggcgg ggcgcggggc gctgaggggc 180
cggcgccggc ggggacactg agccccgcgc ccctcttcag ccccggcacc tacgagcgcc 240
tggcgctgct gctgggctcc attgggctgc tgggcgtcgg caacaacctg ctggtgctcg 300
tcctctacta caagtccag cggtccgcga ctcccactca cctcctcctg gtcaacatca 360
gcctcagcga cctgctgggtg tccctcttcg gggtcacctt taccttcgtg tctgcctga 420
ggaacggctg ggtgtgggac accgtgggct gcgtgtggga cgggtttagc ggcagcctct 480
tcgggattgt ttccattgcc accctaaccg tgctggccta tgaacgttac attcgcgtgg 540
tccatgccag agtgcataat ttttcttggg cctggagggc cattacctac atctggctct 600
actactggc gtgggcagga gcacctctcc tgggatggaa caggtagatc ctggacgtac 660
acggactagg ctgcactgtg gactggaaat ccaaggatgc caacgattcc tcctttgtgc 720
ttttcttatt tcttggtgc ctggtggtgc ccctgggtgt catagcccat tgctatggcc 780
atattctata ttccattcga atgcttcgtt gtgtggaaga tcttcagaca attcaagtga 840
tcaagatttt aaaatatgaa aagaaactgg ccaaaatgtg ctttttaatg atattcact 900
tcctgggtctg ttggatgcct tatatcgtga tctgcttctt ggtggttaat ggtcatggtc 960
acctgggtcac tccaacaata tctattgttt cgtacctctt tgctaaatcg aacctgtat 1020
acaatccagt gatttatgtc ttcatgatca gaaagtttcg aagatccctt ttgcagcttc 1080
tgtgcctccg actgctgagg tgccagaggg ctgctaaaga cctaccagca gctggaagt 1140
aaatgcagat cagacccatt gtgatgtcac agaaagatgg ggacaggcca aagaaaaaag 1200
tgactttcaa ctcttcttcc atcattttta tcatcaccag tgatgaatca ctgtcagttg 1260
acgacagcga caaaaccaat ggttccaaag ttgatgtaat ccaagttcgt cctttgtagg 1320
aatgaagaat ggcaacgaaa gatggggcct taaattggat gccacttttg gactttcatc 1380
ataagaagtg tctggaatac ccgttctatg taatatcaac agaactttgt ggtccagcag 1440
gaaatccgaa ttgcccatat gctcttgggc ctgaggaaga ggttgaacaa aaacaaattc 1500
ttttaattca acgggtgctt tacataatga aaaaaccact tgtggcacac gatgggcac 1560
taacatcatc atcttctaata gtgttgagga ttttcatttc aaatatattt tttaaattac 1620
tctattttcc aaaaacagta atgcattttt ctcgaaaata ccttactgta aaaataactg 1680
tcggtacac atgtgtgaag tagctagaac atactgaatt tttttgtac tgttgactc 1740
tattcagtgat catgtcctat atctgatcaa gttatcaagg agataattct agaataaaa 1800
agaaaatcct cttgttggaa acaaaagacg ttttatatgt gcagtatgac aaagaggagt 1860
ttcagagaca actttgaatc cttgtcagcc tggagaccag caccagagga atctacaagg 1920
caaactcccc tatatttgct tccccaaat tgctgccctt acagactcaa agctcttttt 1980
ctttgttttg ttgtttctct aaaaatttac tgttctttgt cgatgctata taagccaggg 2040
agttctaaga cgccagctct ttgagatttg ctattcccc tgtatttccc acatatatat 2100
tacatatacc cgctaataaa tttatgtttg ttttaaaaaa aaaaaaaaaa aactcagagg 2160
ggg 2163

```

```

<210> 136
<211> 2087
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (1)..(1)
<223> n equals a,t,g, or c

```

```

<400> 136
ncccacgcgt ccgctgttgc tcaaaggaaa taggagttgg tgtgcttgtg accaaggggt 60
tacacttcca gcttttaaaa ttctccttta catgtgctca gtgttttgtt ttgtgttttg 120

```

gtttctgttt	tttattttta	ttccacatt	gggcacaaga	atcagaatat	ggatagctag	180
tttaagaaac	ttttgtgggt	gcaactgtagc	atagatgaca	gaatttgatg	ttcccccat	240
ctccaattca	gttcagggca	ttccacagtt	aaacagaaat	gggaacgtgg	ggctcttata	300
aatgaaatgg	gcgctcacag	ttttggtttt	cagctcttca	tgtctgtaag	tgtgctttgg	360
gggaggctat	gtctgtatgg	tcgattctca	gttatcacat	ttgcctctcc	tccactacc	420
ttcatggaca	ttcagtgctg	tttcgcactg	cagttagaga	gaagggacgg	acagttggtg	480
acactcagcc	acattgctac	ttttatctgt	tctggtaaga	agttagatag	atggtagatt	540
gaagcaattg	ggtagaatta	gttgggggaa	tatttatgag	ttgctgtgtt	tgttgattag	600
ttccatctct	ttcccathtt	aactgagaat	tgattatata	tagctctaag	tatataggta	660
tttaacaac	cccacaagcg	gctgtatcag	taacatttat	taattccact	atagtggagg	720
aggatttcca	ttctaataac	cttattttga	gggatttata	aaacttagtt	gtaaaagaga	780
aagcccatat	gttgggaata	aattgcttca	gccattttta	gtatttgaga	gcactaggga	840
agatgtttag	tagctgtgtg	gatgcctttt	ttcacaccct	gtctattgaa	tgctgcatcc	900
attcacgaag	ttaaatgtta	catgcagtta	gtccttaatg	tggactggat	ctgtactttt	960
gttttgatt	aaaacattta	aagatttttg	aagtgcagct	actccccacg	tggcatttga	1020
tacacataaa	agtcatactg	tgtgtgcaca	aagagtacat	ggattttcca	gcattattgct	1080
ttaaaaaatt	atataaactg	ttaaaatatt	aacacctcag	gctacctgct	gtattctgtc	1140
ccattgaccc	ctggaattgg	atttactgca	agtgattgat	aattcaatta	tgtggctttt	1200
cccccttaat	cttgccattt	aaattacagt	agaaagacaa	aatcaagtaa	aataaagtgt	1260
tagataaatg	aaagagtgtt	aagaccagcc	cacttttctc	atgtttatgt	tctttcattt	1320
ggaccaagaa	tctccgcatg	gaggttgatt	tgccactggg	gactttggct	aagactatta	1380
ggtttgcttt	caactagatg	ttcctgagac	aagcagaggg	acactgcaat	tccccctcca	1440
tgctctgtgt	tctcccccat	gtaagtcttc	tttgaaatta	acggatgtgt	ctcctttgga	1500
acagcccat	aacaaaagag	aactactgat	ctgagcatag	gaaagtagag	gctctaccac	1560
ttttcagttg	aaaaagcaag	actttctctg	tgtttctgaa	acaaggcata	atgttgtcac	1620
agaatcagag	atccagcttc	acttttccac	aaatctccaa	atctccagtc	ttatcttgtg	1680
tgctctaattg	gtttggttca	atcccttttc	aactcttggt	ttcaaagcat	ggggcctgag	1740
tgttctccac	tcctcctaag	aaaggagctt	gggtggaagg	gaccatgctg	acctctcca	1800
tcagagggct	cttcagtag	tattctcgga	tgcaacctcc	atctctcagt	taccattatt	1860
tcctgtatca	gctttgtcct	tcctggaggg	atgcacagtg	atccggccca	ccactgttgt	1920
tgtcttgtgc	ttctgtctct	tcctatgggt	tcaggttatt	ttctgggttt	ccccattctt	1980
tcttttattt	cccttttttt	ttatatttgc	tttcctttct	actgctttta	gatttgcagg	2040
agatgcaagt	ttcagctcaa	tgtttggttt	ctctcaatat	ggaaatt		2087

<210> 137

<211> 830

<212> DNA

<213> Homo sapiens

<400> 137

ggcacgagta	aggactgtgt	tctttatgca	tttcttgatc	caggcatggc	agttcctctt	60
ttcctgtaca	tattcacact	cctgccactt	ctaccctttc	tcttatccct	ctgcttttca	120
cctctgactg	taaaaagaag	tagcagttcc	gaaagcaaga	gttccctatg	aacacggaag	180
aagacattgg	caacttttga	gtacaacaac	tatatttaat	agagtaattt	aagaacatca	240
gccagtgaat	tttatacaag	atagtgaag	agaaaaggaa	gattaattag	gggtagttta	300
ggatgccatt	aatagccta	gaattagggg	agtagtcgtt	gaatagaaag	gaggccacaa	360
atlttagggg	tataagctaa	gaattggtaa	gccaagaaga	aggaaaaggt	ttgggcagta	420
aggataatga	ggaacaaaat	agagaactca	gaagcaatat	ctgactgtta	tcattggaag	480
aatttttttg	cttgcttgag	gctggatatt	gaagtggatc	aggatacttg	agtgactatc	540
tgatgggctt	ttggaactag	ctctcaagag	gtgaaaatta	gctttttttt	ctttttcttt	600
cttttttttt	ttttttgagg	caaggtctca	ctgttggtga	ggctgaacct	cctgggctca	660
agcagttgtc	ccattgcagc	ctcctcagat	actctgtaag	ccaaggcagg	gggaatattt	720
tgtgtctcagt	agtttgaggc	tgtggtgagc	taagatcaca	ctgctgtgct	cacttcagcc	780
tgggcaacac	agtgaacccc	cgtctccatc	tgtttaaaaa	aaaaaaaaaa		830

<210> 138

<211> 1939

<212> DNA

<213> Homo sapiens

<400> 138

gaacacaaac	atgcagtcctg	tagcagatgg	taataggctg	ayatattaca	cttgttgatg	60
taaactctgat	agggtttcttt	ctctccaagg	acagcttttt	aaatatttaa	cagtatcaat	120
aatttttcag	tttctgtgag	aatttttataa	tttataattt	gcagacttaa	tgtataatct	180
attttgtcct	aacaattaca	aatatatttt	ttatttcaga	ttttatata	tcctaccaga	240
tggagataat	tacagcttta	aaaattttta	ttttttcatt	ttatttcaca	cattgacatt	300
aaatttttat	ggacacataa	taactgtaca	tatatatggg	gtagaatgtg	atgttttaat	360
acatgtactc	aatgtgtaat	gatcaaatca	gggtaatttg	cataatgatt	tttctgtagg	420
gagaaaattc	aaaatctact	cttctggcta	ttttcaaata	tataatatgt	tattgttaac	480
tatactcatc	ctactatgca	ataggacacc	agaacttatt	cctgggttct	acatccgtta	540
aggcaaccaa	ggattggaaa	tattggaaaa	aaaaattgcg	tctgtactga	acatgtacag	600
acttttttct	tgtccttatt	ccttacacaa	tatagtacaa	taactatttg	catgacattt	660
acatcggata	ttatgagtga	tctagagtgg	atatgaagta	tatgggagga	tgtgcaagg	720
tgatgtgcaa	atactatgtc	atttttatct	agggacttga	gtatcctttg	ttaycctcag	780
gagatcctga	aacyagtccc	ccatggatac	tgagggtcga	ctgtatagtc	ctatcctcac	840
ggaactttca	ttctaattgrg	ggaagactga	ctataaacia	aatatatgta	ataggtggtg	900
gtaagtaccg	tggagaagta	acaaatgggg	caaagtga	tatacagctc	catycttaga	960
aaccttggag	tacttttctt	agttttatact	cgtgggtggt	tccttttgtc	tcctttatta	1020
catgggactc	tgacatgtgc	ccatagctag	gggtggcagta	ggatctacc	gaaaagcgctc	1080
ctgctgatac	aggaccaaa	catcctgttg	ttctcgagcc	tataaaaaga	gctaattggtc	1140
ttgcttctct	taactgtggc	ctcctacact	gtgttttggg	tgattggtga	tgtcttggat	1200
attctgtttc	tttggaaact	tgaatataca	acactttact	agggaattag	caatggaagc	1260
agagcaaaga	tgtacagagg	aaacaatgcr	taactctgat	ggaattgaag	tcatgaggca	1320
gcagagagct	taaattasag	ctttaaaaat	ttttattttt	tagagggaat	ttamttggga	1380
gtaacagcag	taatagttaa	cggagccaga	atgcttgagt	catataattg	caaagcagag	1440
ttgggagcaa	cagatgctaa	agagttagttg	ctgtagttcc	tccttgggtc	gtaggagcag	1500
ttgtcatrct	mctatayagc	tactgcatga	agaagagttc	ttagttaggc	ctgggtgaac	1560
agctcttctt	agtattctgt	gtgaccccat	tygacctttt	aacaaatccc	taagtaaata	1620
aatagcccct	maggwaaact	aagtttttct	ctgctgtttt	tttgcttgag	agagctataa	1680
ctgtaataga	cttatatttc	tgaacatttt	agtgtctg	aatatttgg	aatatttatg	1740
tttcctatat	ttgtaatgaa	cattcttctt	cmgggtacatt	tyttgtttaa	ttattgttts	1800
atgsataaaa	gttcaccttt	tattgtataa	aattgactca	gattaattta	tacacattga	1860
caatgggtgaa	atagagtttt	tcagattatt	aaaagctgaa	ggatgccc	gtaagcaaaa	1920
aaaaaaaaaa	aaaactcga					1939

<210> 139

<211> 2410

<212> DNA

<213> Homo sapiens

<400> 139

ccacgcgtcc	gcttcgacga	cgacacctgc	agaagtgcgg	agcccgcctat	gccgcgccac	60
ctctcgggac	tgctcctgct	gctctggccg	ctgctgctgc	tgctgcgcc	gaccccgcc	120
gcccccgcc	ccttgccccg	cccgggtttg	cggaggtcgg	gcacgcgggg	cccagggggc	180
agtcccgggc	gccgccctgt	ctctgctgtc	cccacccgcg	cgccctattc	cggggccggc	240
cagcccggcg	gggcccggag	cgcaggtgtt	tgcaggagca	ggcccttggg	tttgggttct	300
atcatcgata	gttcccgcag	tgtgcggccc	ctggagttca	ccaaagtga	gacctttgtc	360
tcccagataa	ttgacactct	ggacattggg	gcggcagata	cacgggtggc	agtgggtgaac	420
tatgctagca	ccgtgaagat	tgagtcccat	ctccagaccc	actcagataa	acagtccttg	480
aaacaggtcg	tggctcggat	cacacccctg	tctacaggca	ccatgtccgg	cctggctatc	540
cagacagcaa	tggatgaggc	cttcacgggtg	gaggcaggag	ctcggggggc	cacttccaac	600
atccctaagg	tggccatcat	cgtgacagat	gggaggcccc	aggaccaggt	gaatgaggtg	660
gcggtcgggg	cccgggcac	tggatttgaa	ctctacgcgc	tgggctggga	ccgggcagac	720
atggagtccc	tcaagatgat	ggccagcgag	cccctagacg	agcacgtttt	ctatgtggag	780
acctacgggg	tatttgagaa	actctcctct	agattccagg	aaaccttttg	cgctctggac	840
ccgtgtgtgc	ttggcacaca	ccggtgccag	cacgtgtgtg	tcagtgtatg	ggaaggcaag	900
caccactgtg	agtgcagcca	aggctactcc	ttgaacgcgc	atcagaagac	gtgttcagct	960
atcgataagt	gtgctctgaa	cactcacggg	tgtgaacaca	tctgtgtgaa	cgacagaact	1020
ggctcttacc	actgtgagtg	ctacgaaggt	tacacccctga	accaagacag	gaagacttgt	1080
tcgggtcaag	accaatgtgc	ctttgggtaca	catggctgcc	agcacatttg	tgtaaatgac	1140
agagatgggt	cccactactg	tgaatgctac	gaggggtata	ctctgaatgc	tgacaacaaa	1200
acgtgttcag	ttcgcagcga	gtgtgctggg	ggctcgcacg	gctgccagca	cctgtgtgtg	1260

gacgacgggc	ccgcggccta	tcactgcat	tgtttccccg	gctacaccct	gaccgaagac	1320
cggaggacgt	gcgcagccat	tgaagaagca	cgaagactcg	tctctacaga	agatgcttgt	1380
gggtgtgaag	ccaccctggc	cttccaggag	agggccagct	catatctgca	gagactgaat	1440
gccaaactcg	atgatatattt	gggcaagtgt	caagcagatg	cgtatggaca	aatacatcgt	1500
tgaattactc	agatttttca	cctggatata	cggagagcct	ggctctattta	atatttttgc	1560
atacttcaat	gttctctgta	ataatttgcc	attgcaaagt	ctttaaatatt	actggataag	1620
tagtatgagg	atcttctaga	gaatcagtag	gacataaacg	ttcacatcct	taagagcaaa	1680
ctttagtgtc	tctaagctat	gactgtgaaa	tgattcatgg	ggaatagaat	gaaaagtttg	1740
gtatctcttt	atttaccaat	tgagccattt	aattttttaa	tgtttatatt	agtaagataa	1800
ccattctttac	aatgggaact	ttttatctat	tttctcttga	tagtatttat	agtataaacc	1860
agtttttatta	ttgagagtgt	aaattatata	agtatttaca	cataaaaaag	ttcatataat	1920
tgaggtaaat	ataattttaga	actgtttctt	taattgctttg	ttttttgtct	actttttgtc	1980
ggaatatcac	tgaagctgtg	atcaggggat	tataacacat	atcaagatca	agtgaacact	2040
acatgaaata	ttgtaagaaa	cacataacta	aagacttttag	ttttgaatta	agtgtttataa	2100
cttctttacca	agtttttggt	aaaaatccta	cattatcttt	actgtttcac	tttaggattc	2160
aatcaagaaa	attatatact	tataaatatt	gatctaaaaa	gttaacaaca	aacccaatgt	2220
cgccattttta	aagttaaagc	ttaacttttc	ttcacttaca	tatttagtat	atgtatttta	2280
tttttccgct	tgaaagctta	tagctcttag	gagaaaacca	tcctttaaat	tgtgactact	2340
cattttttct	gtttgtattg	tcttttagtat	aataaaaaagt	tactatcttt	ataaaaaaaa	2400
aaaaaaaaaa						2410

<210> 140

<211> 1491

<212> DNA

<213> Homo sapiens

<400> 140

ccacgcgtcc	gggagccatg	gcgcgcgtccg	ggccgctgct	gctgggtgctg	ctcgtgccgc	60
tggccgcgcg	gcgggcccgg	cctacttccc	gtcccggccc	gggctgccgc	ctgcccctgc	120
ggggggacca	gctgtcgggg	ctggggcgca	ggacctaccc	ccggccgcac	gagtacctgt	180
ccccatctga	cctgcccaag	agctgggact	ggcgcaacgt	gaacggggtc	aactatgcc	240
gtgccaccag	gaaccagcat	atccccagct	actgtggctc	ctgctgggccc	cacggcagca	300
ccagtgccat	ggcgggaccg	gatcaacatc	aagagaaagg	gggcgtggcc	ctccaccctg	360
ctgtccgtgc	agcacgtcct	cgactgcgcc	aacgcgggct	cctgtgaggg	gggcaacgac	420
ctgcgcgtgt	ggaggtagcg	ccatgagcac	ggcatcccgg	acgagacctg	caacaactac	480
caggctaagg	accaggaatg	caacaagtcc	aaccagtgtg	gaacatgcac	ggaattcaag	540
gagtgccatt	acatccagaa	ctacacgtcc	tggaaagtgg	gtgactacgg	ctccctctcc	600
ggcagggaga	agatgatggc	ggaaatctat	gccaacggcc	ccatcagctg	cggtatcatg	660
gccacggaga	agatggtgaa	ctacacggga	ggcatctacg	cggagtacca	ggatcaggcc	720
tacataaacc	acgtcatttc	tgtggtcggc	tggggcgctc	gcgacggcac	ggagtactgg	780
gttgtccgga	attcgtgggg	ggaaccgtgg	ggggagcacg	gctggatgag	gattgtgacc	840
agcacctata	aagacgggca	gggcgccagt	tacaacctcg	ctgtcgagga	cacctgtacg	900
tttggggacc	ccatcggtta	agggaacagg	ctccccagaa	gagcagtgtt	atcgtgaacc	960
ataatcaggg	ggtcctatcg	ctctggggcac	tgggttggtt	ccaccatggt	ctgaaggagc	1020
tggggactgg	catcaaacgt	gtctgatggc	tgtctgcggc	cccgtgcgcc	cagaaggagg	1080
aaggggcgcc	tgtcagcaca	cagcctgccg	cggcgccggc	cgggagcgcg	ctcctgggga	1140
agagtctgca	atgggacggc	tgagagcccc	gggcccggca	ctgccctgcc	ccagtgtctg	1200
cctggccacc	gtgtgatccg	caaggcccaa	acgatgtgac	tgccaagctc	ctctgtccct	1260
gatttggtgt	ttcctgtctg	gcagctgtgg	tccatgatgt	ggtgcggaag	cccaggcttc	1320
tcaaagctct	tacgttgcc	gggattcggc	gggggggagt	cgggggggtg	agggagaaga	1380
cggccctgtg	agattgccca	agtgatgaat	aaagtacgtg	accccgcaaa	aaaaaaaaaa	1440
aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	a	1491

<210> 141

<211> 3530

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (30) .. (30)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (59)..(59)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (79)..(79)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (3465)..(3465)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (3471)..(3471)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (3485)..(3485)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (3487)..(3487)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (3505)..(3505)

<223> n equals a,t,g, or c

<400> 141

gacatgaagc	caaccggcac	ccggccccc	atattgttata	acagtactct.	aatttgaanc	60
catgataaaa	ataaccatnc	atattgtaaat	ccacagagga	ccctgggtgaa	ttcctaacac	120
atattttctg	tcttgttaag	ctgttgaatt	gcatcatggg	ggagaaatgt	gtaaatagaa	180
gtaatgatct	tggtgtttgt	aaaaggggta	tttgaaaggt	tcccgaaagt	gtgagggggc	240
tgatagcaga	tctgcagctt	ctccccccgt	gcactaaagc	caatcataat	tctttctacc	300
tggttttgtg	catctcccat	taggagaccc	catcttcaga	accaatggag	gaagaggaag	360
atgacgactt	ggagctgttt	ggtggctatg	atagtttccg	gagttataac	agcagtgtgg	420
gcagtgcagc	cagctcctat	ctggaggagt	caagtgaagc	agaaaaatgag	gatcgggaag	480
caggggaact	gccgacctcc	ccgctgcatt	tgctcagccc	tgggactcct	cgtcctctgg	540
atggcagtgg	ttctgagcca	gctgtctgtg	agatgtgtgg	tatcgtgggt	acaagggaag	600
ccttcttctc	caagaccaag	aggttctgca	gcgtctcctg	ctccaggagc	tactcctcca	660
actccaagaa	agccagtatc	ttggctaggt	tacagggaaa	accaccgacc	aaaaaagcca	720
aagtctctga	caaggctgcc	tggtctgcca	aaattggagc	cttcctccac	tctcaaggga	780
caggacagct	ggcagatggg	acaccaacag	gacaagacgc	tctgggtcttg	ggcttcgact	840
gggggaagtt	cctgaaggat	cacagttaca	aggctgctcc	cgctcagctgt	ttcaagcacg	900
tcccactcta	tgaccagtgg	gaggatgtga	tgaaagggat	gaagggtggag	gtgctcaaca	960
gtgatgtgtg	gctccccagc	cgggtgtact	ggatcgcctc	tgtcatccag	acagcagggt	1020
atcgggtgct	gcttcggtat	gaaggctttg	aaaatgacgc	cagccatgac	ttctgggtgca	1080
acctgggaac	agtggatgtc	cacccatttg	gctgggtgtg	catcaacagc	aagatcctag	1140
tgccccacgc	gaccatccat	gccaaagtta	ccgactggaa	gggctacctc	atgaaacggc	1200
tggtgggctc	caggacgctt	cccgtggatt	tccacatcaa	gatgggtggag	agcatgaagt	1260
acccctttag	gcagggcatg	cggctggaag	tggtggacaa	gtcccagggtg	tcacgcactc	1320
gcatggctgt	ggtggacaca	gtaatcgggg	gtcgcctacg	gctcctctac	gaggatgggtg	1380

acagtgcga	cgacttctgg	tgccacatgt	ggagccccct	gatccacca	gtgggttgg	1440
cacgacgtgt	gggccacggc	atcaagatgt	cagagaggcg	aagtgcacatg	gcccacacc	1500
ccaccttccg	gaagatctac	tgtgatgccg	ttccttacct	cttcaagaag	gtacgagcag	1560
tctacacaga	aggcggttgg	tttgaggaag	ggatgaagct	ggaggccatt	gacccctga	1620
atctgggcaa	catctgcgtg	gcaactgtct	gtaagggtct	cctggatgga	tacctgatga	1680
tctgtgtgga	cggggggccc	tccacagatg	gcttggactg	gttctgctac	catgcctctt	1740
cccacgccat	cttcccgccc	accttctgtc	agaagaatga	cattgagctc	acaccgcaa	1800
aaggttatga	ggcacagact	ttcaactggg	agaactactt	ggagaagacc	aagtcgaaag	1860
ccgctccatc	gagactcttt	aacatggatt	gccccaaacca	tggcttcaag	gtgggcatga	1920
agctggaggc	cgtggacctg	atggagcccc	ggctcatctg	tgtggccacg	gtgaaacgag	1980
tgggtgcatc	gtccttcagc	atccactttg	acggctggga	cagcgagtac	gaccagtggg	2040
tggactggca	gtccccagac	atctaccccc	tgggctgggtg	tgagctcacc	ggctaccagc	2100
tccagcctcc	tgtggccgca	gaaccggcca	caccgctgaa	ggccaaagag	gccacaaaga	2160
agaaaaagaa	acagtttggg	aagaaaagga	aaagaatccc	gcccactaag	acgcgacccc	2220
tcagacaggg	gtccaagaag	cccctgctgg	aggacgaccc	tcagggtgcc	aggaagatct	2280
cgctggagcc	tgttcctggc	gagatcattg	ctgtgcgtgt	gaaggaagag	catctagacg	2340
tggcctcgcc	cgacaaggct	tcaagtccag	agctgcctgt	ctccgtcgag	aacatcaagc	2400
aggaaacaga	cgactgagcc	ttcctgcctc	cagcctggct	tctagctgga	agccagccca	2460
gcgtttctct	accaccacca	ccatgcctcc	acctgacttt	ggcttggaga	ctgatectct	2520
ctgtgtaaat	tctgcccggg	gctgtgaagg	ctggacgggtg	gaggacctgc	tggggtctcc	2580
tgggacccgc	ctgttgcttc	tgccctcccc	tgtggaaagg	tctatatgac	gggccgcctg	2640
aggccccaga	actcgtctgt	gaaccacctt	ttccagccag	agttcccaaa	gctggaacgc	2700
tagctgcctg	ctcttcctta	agatggcctc	ccccgcaccc	gccacggccc	tcagttgccca	2760
gggatggggc	caccactgtc	acactgtgga	atacaagaca	gtgaactctg	tctgcctgaa	2820
cgagtcattg	aaattaagtt	ctagagcagc	tctctgagca	ggataagggtc	ccctgacagt	2880
gagttgtgtg	gtgggggcag	cctctgcctc	aaaaattcac	caagcagaat	gcctctcagc	2940
ctcatgtgtt	ggctctctgc	tcctcctagc	tccccaggga	tgttggggac	ccagcttgctc	3000
tcggcagcta	agaagcagtg	accaggatgt	ggattttggc	gacctgtgtg	gtggccttga	3060
gctgctttct	gtgtttgtga	ggactgactc	ccatttccta	aaggaaatgc	ccccggggag	3120
gacattggga	ggaagatggc	ctgagtgtgc	actttggctc	tgtactctgc	tcctgaagcc	3180
ccgctaaaaa	taattcatcc	aagattcctt	tgtagttaaa	gggtccagtt	ctgactggag	3240
cctctagaga	aatgggcttg	tatgttcttt	tggccttttg	ttcctaccta	aatgaagaaa	3300
ccatgcctgg	agggggccgtg	aacacagaac	cctcaagaca	aggatgacag	agctggagga	3360
cacatctagc	tgccattgca	acctcactgg	gctccccaga	ctctgtgtgt	gagaaattaa	3420
acccctgct	tgcttgagtc	ccgtttgtta	aggattcttc	tattnccttg	ncagatttgt	3480
gttcngnacc	ccaccccccc	acctngtggt	attcgggtta	gaaagggcca		3530

<210> 142

<211> 1145

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (386)..(386)

<223> n equals a,t,g, or c

<400> 142

aattcggcac	gaggacatat	tggccattta	ctctactaat	aaaagagtac	tatctactca	60
gtgtcattta	ctgttactgt	agtaattaat	gcctttggaa	gaatcttttg	aaatagttct	120
caaattggta	ccactacttg	gtttggaatt	atTTTTTTTT	cttttcataa	tcaatgggtta	180
tataaatgta	tattgtccta	gtcagtattt	tatatatgct	aaggactcac	tagctggctt	240
ggcactaata	cctcaataaa	aggaataactt	cttttggaa	catgaaacaa	aagtgartaa	300
acctccaagt	tatttttcca	accaaccttc	tttgaaaaat	cttggatgag	tcactcaaat	360
caagacatgt	tataaaatta	tctgtnatTT	tggtagaaca	tatacattgt	yctaataata	420
atttycaa	attcagtgka	acygtaagka	tgagaataca	ggttgaatat	cycttatcca	480
aaatgcttgg	gaccagaagt	cttttggatt	ycaaattttt	aaatatTTac	atcatactta	540
ccagtttaac	atccctaatt	caaaaattca	aaattcagaa	tgctccaata	atcgtttctt	600
ttgascatca	tgctcagtgt	caaaaagtgt	cagattttga	ggtattttcag	atttttgaat	660
taggaagact	caacttgtag	tatcattcta	tagactttat	gattgggtag	actacatgag	720
tattgaaccc	agaaatcatt	gtctagcaaa	agccagtata	gtgattaatt	accctgtgac	780

tattatataa	tggtcaaaaa	agctaacata	ttagaatgtc	cttagcgtgc	agagagcaaa	840
cagagacaaa	aagaaaagtt	accctgaaaa	gtttgtcaga	aaaatagaat	atcagacgct	900
raactactca	tccagaatatt	tgtcraaaaa	gaaaaataag	ataaaattca	ctggtagaca	960
aaaagtagta	acataccagt	ttgtaatttc	tcagtttcaa	accatgaata	tgtattttgta	1020
taccaaaaat	catttcagga	gtcagagaag	gaggatatgc	cttttatgtg	gagactttaa	1080
acataaaaatt	ggaaaaaaa	aaaaaaaaa	actcgtaggg	ggggtcccgt	acccaatcgt	1140
cctgt						1145

<210> 143

<211> 2214

<212> DNA

<213> Homo sapiens

<400> 143

gcagtcgcag	catgctttcc	gaggaagccg	gtgttgccga	gattgccaaa	atgctttgga	60
gtttttaact	gaatctaaga	aaagtccaaa	atagatttga	gactgtaaaa	acagaaactg	120
cagcaagggg	gattcagtcg	caatgcatca	acaaaaaaga	caaccagagt	tagtggaagg	180
aaatcttctt	gttttcgtgt	tccccacgga	gctcatattt	tatgcagatg	atcagtcaac	240
acataagcaa	atgttgacac	tgtacaatcc	ctatgagttt	gccttaaagt	tcaaagtttt	300
gtgtactact	ccaaataagt	atgttgctgt	tgtatgctga	ggtgcagtaa	agcctcagtg	360
ttgtgtggat	attgtgattc	gtcatcgaga	tgttcgatcc	tgtcactatg	gtgtaataga	420
caaattccgt	ctccaagttt	ccgagcaaag	ccaaaggaag	gctttgggga	agaaaagagg	480
ttgttgctac	tcttctccca	tcagcaaaag	aacaacaaaa	ggaagaagag	gaaaaaagat	540
taaaggraca	tttaackgaa	aktttatatt	ttgagcagtc	gtttcaacca	ggtcttatca	600
caatggccat	acttagaaca	tgagcaagga	tttcaattga	cttctgaagt	aaatctgtct	660
tgaaaatatt	aatgtggact	gcctttttatc	tctatttcac	tccattaaca	tgcaacaaac	720
tattgaatga	tttcaataaa	ttgcaaatgt	ataatatata	ttttaaatta	taatttaatt	780
tgaaggactg	cagaacatta	ttttacagac	agcaaggatg	cttctgagtg	acacctagga	840
aattatttga	agaaattctt	tttatatcta	yacctgttgt	gtaagaaact	ttaaaacatt	900
kgttattttc	tcaccttttt	ttctaattca	ctttgattgc	tagggggtcat	gtatgcttcg	960
aagttacagg	actaaaagag	caaactgacc	ggcctaaaac	taaaatgaca	tttattccct	1020
agctacaaac	atcagcggtta	ttatgttaat	tataccttgc	cctctatcat	tataaatggt	1080
tgccatgggtg	tttctaaaaa	taagtgtttt	accattaatg	tgtagagggc	aaacaaagca	1140
taaagtacta	agggatcatg	cttatcctag	ggtctcacag	aagagaggac	atattttaatt	1200
aatcttgtga	attacagaac	aggttgtggt	ccagacacca	agaatcatag	gggttttttt	1260
ttaaaaaacc	taatagaagt	agggtgacct	ctctcttttg	tctaagaggt	ctaaaggaag	1320
gtaggcatct	gtttaattag	ttggttcacc	ctggctttac	ctctgggttaa	tgtcttgtgt	1380
taataggaag	gaaaaatcac	tttatctttt	cttccaagcc	cctccctgcc	tgacttaccc	1440
agactgggat	taccagatac	caggtgattt	atgtggagat	gattttttcac	ctttaaactc	1500
taagccaagt	gtaagaaact	cttgatagct	atgtctatatt	tatatcagtc	actgagactt	1560
ttttttaagt	ttttatttat	tattaaagaca	actttgccaa	aaaagtcccc	taagcacaac	1620
tatttacatt	tctttatagc	ctcttctgat	ctctaacaca	tatgcagttt	taactgttat	1680
tttcatagta	actgatcttt	tgtctaagga	tttttacctg	aaagcacaa	gtatttgagtc	1740
tcttgaaaat	catcttttcag	atcttttttac	agaatgaact	tatgcactgc	tactgtagta	1800
ttctcaagga	atatatgtaa	acacaaatgt	atgcctgagg	ttgggtttttg	cagaaaacag	1860
tctctgcttc	taaaaacttc	tatgtctagt	cttccatagg	aaatcctcac	tgtttaacca	1920
tgtgaggagc	ctaagtcatt	aaacggatca	tgtctgtaca	ttgtgtaatg	aatgaaaagc	1980
acataaatgt	aatctacttt	gaactttgta	aaaatgatgt	gtggaggcta	ttcttgtttc	2040
tccatctcaa	gtcctgtgtg	tgcacgtgtg	tgcaagtgca	catgtgtgtg	tgtataaaca	2100
cattgtaaaag	aacagaaatt	acttttaaaaa	ataaacagaa	atggagacct	gaaaaaaaaa	2160
aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	tcgagggggg	gtcccgtacc	caat	2214

<210> 144

<211> 813

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (283)..(283)

<223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (691)..(691)
 <223> n equals a,t,g, or c

<400> 144
 gcaggaatctt ctacctatat ttcccttcctt actgtgttgt gtgtgtttgt atgtgttgtgt 60
 gtttaatttg tagcatttgc cagtttctgt ggtgtaaata ctcccactac agctgttttc 120
 aagctaacat tgtgatacca caaaaaatgg aattgggaag gcacaatcaa gattaacaag 180
 ccagtttaga ccaagacaat ttttctgccc tattagttgg gcacaagtta gaaaggctga 240
 tagtactcca gtttggaag gtgagagaga aggcctcat gcnttattaa tggcatatgc 300
 attgaagtgc cctgtttgag ggcattgctgt tagtaacttt taaaatatga gatgtcatac 360
 tttttgactg aaaatacaac tcttgttagga ttctatttta tagaactact taggtgcata 420
 aatatacaaa aataactgtc attgcagcat tatttgtaat agtggaaaca gaagactttt 480
 cattaataag agaatggtta ggccagatcc agtggctcac acctgtaac ccaacatttt 540
 gggaatccaa ggcaggagga tcgctttagc ctaggagttg gagaccagca tgggcaacat 600
 aacaagacct tgtctctact aaaaaaaaaa aataataatt agtctggcat ggtggcacac 660
 ctgtactccc agctacttgg gaggtgggg ncaaggagga ttgcttgagc ccaggagatt 720
 gaggtgcag tgaactgtga tcacaccact gcacaccagc ctgggtgaca cagcaaaact 780
 ctgtctcaaa aaaaaaaaaa aaaaaaactc gta 813

<210> 145
 <211> 1739
 <212> DNA
 <213> Homo sapiens

<400> 145
 ggcacgagag atcctcagga tatcttttagc caaaggaaaa gctccgcatt cccacctggg 60
 gggaaagctg gattgccatg ggcacgaagt agtgggtgcag agtccctggc catcctgaat 120
 atccagaatg gtgtttctga agttcttctg catgagtttc ttctgccacc tgtgtcaagg 180
 ctacttcgat ggcctctct acccagagat gtccaatggg actctgcacc actactcgt 240
 gcccgatggg gatcatgagg agaacgatga ccccgagaag tgccagctgc tcttcagggt 300
 gagtgaccac aggcgctgct cccaggggga ggggagccag gttggcagcc tgctgagcct 360
 caccctgcgg gaggagttca ccgtgctggg ccaccaggtg gaggatgctg ggcgcgtgct 420
 ggaggggcatc agcaaaagca tctcctacga cctagacggg gaagagagct atggcaagta 480
 cctgcggcgg gagtcccacc agatcgggga tgccactacc aactcggaca aatccctcac 540
 tgagctggag agcaagttca agcagggccca ggaacaggag agccggcagg agagcaggct 600
 caacgaggac tttctgggaa tgctgggtcca caccaggtcc ctgctgaagg agacactgga 660
 catctctgtg gggctcaggg acaaatacga gctgctggcc ctcaccatta ggagccatgg 720
 gacccgacta ggtcggctga aaaatgatta tcttaaagta taggtggaag gatacaaatg 780
 ctgaaagag ggaatcaaat cagccccgtt ttggagggtg ggggacagaa gatggggcta 840
 catttcccc atacctacta tttttttata tcccgatttg cactttgaga atacatctaa 900
 ggtcatcttt caaaagagaa aaattggaca cttgagtgac tttgttttta gttttgtttt 960
 tgtacattat ttatgtgatt gttatggaat tgtcactgg aaagaacaat tttaagcaat 1020
 gtcatttcta gatgggtttc taattctgca gagacaccg tttcagccac atctaaaaga 1080
 gcacagttta tgtgggtcgg aattaaactt ccccatctg cagattatgt ggaaataccc 1140
 aaagataata gtgcatagct cctttcagcc tctagccttc actcctgggc tccaaaagct 1200
 atcccagttg cctgtttttc aaatgaggtt caagggtgct ctttgcatgc ctgccaaacc 1260
 atggaagttg tttcttactt cttttctctc ttatttatta accatggtct gagagttggt 1320
 tttgttctat gtaacagtat tgccacaaaa ctataggcaa atcgtgtttg caggagatt 1380
 tctgatgcct ctgtgggtgt gtgtaagtta aagtggccac atttaagaag gccaaagctt 1440
 gtatgggttg cacagtcaca ctgatatgct gatttgctct ttctcattgt atgtctatgc 1500
 tttgtcatca gtgctatagt aaattacaaa gaaataggta gattgtatga acataccac 1560
 aaatgcctat gatttaggtt accaatgtat tctttctcat ttggggtttt gcttctgtct 1620
 gtctgtttat tggaaacttg tacttcaagt agggggaatc ctaattctaa taactcctta 1680
 gctaagtttt attattcagg caataaacat gttttcatgt aaaaaaaaaa aaaaaaaaaa 1739

<210> 146
 <211> 1677
 <212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1012)..(1012)

<223> n equals a,t,g, or c

<400> 146

```

ggtgcagtgg tgcacatcaca gttcactgca gccttgacct cccgggctca agcaatcctc 60
ccacctcagc cacttgagta gctgagacct cagatatgtg ccatcacacc cagctgattt 120
tttaaaatta attttttgta gagatagggt ctcatatgtt gcccatgctg gtctcaaact 180
actgggttca aatgatcctc ctgcctcagc cttccaaagt actgggatta caggcatgag 240
ccaccatgcc gggctgggag gcggaatttt gttcagtcta aagataagct ttttcatagc 300
tctggctgta gtgggaggga gcagaggagt gaatgattgt cagttgggag ggtgcagagt 360
gggctcctgc cctagggtgr aggttagggg ggcttaggtg asmcamcaca gaggccctgt 420
tcagccccac gtcccctccc tgtgtcctct cctcctctct cctcctcctg aggcgtggga 480
ggtatcatca ttcagcagat ttcaccagag gcagtggagg aggcaggtag ctgagccaga 540
attcagaatg tcttattctc cacttgactc tgccactaac ttgttggtgca actttgggcc 600
tttccccagg ccttcatttt cttttctttt cttttctttt yttttttttt gaggcggagt 660
ctcgctatgt tgcccaggct ggagtgcagt ggcgagcat catctcggct cactgcaagc 720
tccaccttct gagttcacgc cattctactg cctcagcctc ccgagtagcc gggactgcag 780
gcrccacca ccacgcccgg cttatttttt gtatttttag tagagacagg gtttcaccac 840
gtagccaag atggtctcga tctcctgacc tcgtgatcca cccgcctggg cttcccaaag 900
tgctgggatt acaggcgtga gccactgcgc ccggccattt tcttaaatat ctaataaaaa 960
atatatagca aatgcagttt ttaactacg acaatatgac cagcgaag antattatct 1020
tccaagactg ctggtccaag gaaaagtcag taataaagt gaagcattgt agcttatgga 1080
atgactgggt asatttggga gaagccttag caataatcta gaatctgcat agataatata 1140
tctgaggatt gggctttgtg gtttacaagg catttttttt tctctttttg atcccagccg 1200
tttgtctgga ctgatacaaa gcatttttat tagtttgtct tattcaatcc tcacaccacc 1260
tcaaatttac agaggatatg gatctggtta atttgtatga ctatgtaacc tcatgtcagt 1320
ccacagcact gcctggagggt gggtagagggt ggtcctgggc tggaatccca gcccagtg 1380
gaccttgagc aagtactttt agctgtctgc acctaaattt cctcactggc aaaacaggaa 1440
tactggtggt tcacacctgc aattccagca ctttgggagg ctgagggtggg aggattgctt 1500
gagtcagaaa gttcaaaacc agactgggca acatagcaag accatctcta caaaaattaa 1560
ataaataaaa catttacaag ggttgtggtg aagattaaat gagatcactc acgaaaaagc 1620
tcagcagacc ctgatgtgca gtaggtgctc aataaatgtt agccagcaaa aaaaaag 1677

```

<210> 147

<211> 2648

<212> DNA

<213> Homo sapiens

<400> 147

```

ggcacgagct tgtaggtagt cattgaggtt tattgtgtaa gatgaatgaa tgttgcaaat 60
tcctaaacat gtgattcaga tgccaatct tactctgtta ctttatgaaa attttttaaa 120
gctatatgat gttatatcaa aatatgttgt tatacttttag gataatcggg gtgttagccc 180
tgaatttcag cataagtccc atttttttcc atgggagctc aggaaagcta tatgtttatt 240
cagcagcaaa atacagtttg gaacttaaat aaactattga tcaatttctg gtcttatgct 300
agaaggaata aagcatcaag aaaaagaaaa gatttgctgt caagaccagg aaaatttgac 360
aatagagtat tagaatgcag gaaatgaggg gaagtggaaa ggcagcaagt aggagagaaa 420
aagtgcaggg acagtagaaa gtgaatgtag gagctttctg acccatgcac ttcaggaaacg 480
caattcatcc ctaaaatgct gtttgcgtgc ttaggttgca agtaaccaa ttaaaaccag 540
tttgaagta gagtgagaca gctgtcatca taagagtcac ttgatctgtt taaagggtggc 600
tgcttgtagt cagggaccaa cagtcatgtc cagggcagca gctggtgcac acttcaagca 660
cagaccataa gagctacccc aggcagcacc tgctaccaat agtgcaaaaca actcagagag 720
acctcggttg cataagggaa tactctctcc tttctgagta aagagcaagt agaactaaag 780
gtttcacatt ttaaacatac tttactctc tctcttctg gggctcaagc ctacttttgg 840
gccaaagcgg atgttatatc tgacatagac tctctggagc agcagttgtt cctgaaagt 900
cctttttgca tctttgtgcc tcatgcagtg gcttacaggc caaccagact tctccctga 960
cttttgatgt gtaagagctt gtgtttcaaa tgggtttggt tttcttaatg tcaccctagg 1020
ttggtggaaa ggagagtaaa tggaaatggg gggagcaggg tcccctgggg aggtttaaac 1080

```

agatggaagt	caattgtctc	ttgagaatag	aggaggctat	tgagttttca	ttccacactc	1140
tgctcctggt	ctgtcagcaa	agaacaagga	ctactctcca	gcaattgctt	tccactggac	1200
tccccacccc	cggtccccc	aaaaacctag	ggatcaactt	agttcactcc	aaattagaaa	1260
atttaaatagt	catttgtttc	ttcttgtcca	cagggagaa	cattttcttt	ccttctttca	1320
aaattgcccc	ggcttgtga	agggttatta	acaccagaaa	gaaatacatt	ttaataagct	1380
taaatctcat	ttctacatga	aaccatcaga	ttttagtagt	gcaatatttt	gatccctctg	1440
tcttttaggc	tctgacacca	aaattgccat	aatgaagggt	tttcaactct	tctcatttat	1500
ttttatggga	tcttttatcc	ccaaatgcct	tttcatccca	gccaaaggga	gaaatgttga	1560
tagatctgcc	atcaagaagg	ttccaaagct	ggcctgtcag	gttttctggt	tccttgttta	1620
ttatctttga	acttttgttt	taaagtgttt	aaacacttat	ttaccatgta	actaaatgcc	1680
tgatagcatt	gaaagtactt	tatgggtttt	aatttattta	atgctcatga	aaccctatga	1740
ggtaggccct	gatattattt	ttattttact	gatgaggaaa	gtgaagcaaa	gagaagtga	1800
atgaaaggta	gtgagtgtat	ggaccagggt	ttggacatgg	gcagtctggc	tctaaaatgt	1860
atgcttttaa	ctactatgta	atgctgcctc	accaacaact	tgtctcaca	attgatattc	1920
tggtacagag	gatgtcgact	ggcctgcaaa	tgtattttgt	atggctcata	cacagttcag	1980
aagttttaaa	aatttacata	gaaatctgca	tttctgact	tcttttga	atgggaatac	2040
caaacatcat	taggcttgaa	ttcccaatac	ggcaacaaca	gctgagcaac	aagcagctgt	2100
ttagactagg	caccttccgt	tcattccagc	ccacaatgca	gatcatagta	tcgacttaaa	2160
tttctgcct	gccttagaga	agcttctgag	cttgtgacct	ctattctagc	tgctctatga	2220
atggagcgtg	ccccagtaca	gcgaggacct	gctgcaaaat	gcatttctta	gtcttcaata	2280
cttattcctc	cttgttaactg	gatttctggt	aagttatgtc	tcattggtgga	tctgccccaa	2340
agatggagac	tgaatggcag	tgagtcactc	gccctggcct	ccattgttct	ggagaagggt	2400
ccagccacat	ggttgatgtc	agctgggttt	ccagagccag	agctgggttg	caggacagac	2460
acacctgcat	ctaatagtga	aaggcaaatg	tgaaaggcca	agaccagcct	gaggtctgag	2520
ggaccaaggg	cttcacagag	gccagaagtt	cagagggtga	cataaaaggt	gttaggagaa	2580
taagggaagt	aaaagaacat	agtacagtgt	atcagaggag	gagctccagg	ctggcaataa	2640
tcactccc						2648

<210> 148

<211> 1084

<212> DNA

<213> Homo sapiens

<400> 148

ggcacgagcc	accatgcccc	gcctagatta	aaaatttgaa	gacatattct	ctactatgag	60
ccaatgaaat	tactcatttt	gtttctatcc	catttgcgtg	cccttgcttt	tggaattttg	120
tgtcttagtg	tgactgtgat	tctttctctc	cttttgcctt	tcagcaaacg	gggattcagc	180
gtccgatcc	ttggaacagg	gactcacgtg	aagcttccag	gaccagctcc	cgacaagccc	240
aatgttttat	attttcaaac	cacatattgac	cagatgtaca	atgatcttct	taggaaagac	300
aaagaactct	atacacagaa	tgggatttta	catatgctgg	acagaaataa	gagaatcaag	360
ccccggccag	aaagattcca	gaactgcaaa	gacctgtttg	atctgatcct	cacttgcgaa	420
gagagagtgt	atgaccagg	ggtggaagat	ctgaattcca	gagaacagga	gacctgccag	480
cccgtgcacg	tgttcaatgt	ggacatccag	gacaaccacg	aggaggccac	cctgggggag	540
tttctcatct	gtgagctctg	ccagtgtatc	cagcacacgg	aagacatgga	gaacgagatc	600
gacgagctgc	tgcaggagtt	cgaggagaag	agtggccgca	cctttctgca	caccgtctgc	660
ttctactgag	cccagcgccc	gcatggagcc	gcctctggag	cttctctgtg	ttcatacttt	720
ttccttctct	acatttgttt	ttacttacag	gtgttctgct	ggtgacggta	gcattaccca	780
aataaactgt	gcatatgaaa	tgggagagga	gatgccaaaa	cgccagatga	aagcaatcaa	840
gtttcttctt	ttccactttt	acttatgagc	gggatattga	ttacaaagtt	tttcttcttt	900
aaccaaaaag	gaaagacaac	ggtttgtgtg	cacttcccga	catacctgtg	tcttctgtgt	960
cctgccttcc	ctccctctct	cccaccgggc	cggactgtac	agagccctgc	tgcggcgtgt	1020
taggaatgac	ctggaattgt	caataaacag	atgctgtgtg	caaaaaaaaa	aaaaaaaaaa	1080
aaaa						1084

<210> 149

<211> 2072

<212> DNA

<213> Homo sapiens

<400> 149

cccacgcgtc	cggcggtttta	cgcaggctgt	ggcagcgacg	cgggtcccccag	cctgggtaaa	60
------------	-------------	------------	------------	--------------	------------	----

gatggcccca	tggcccccga	agggcctagt	cccagctgtg	ctctggggcc	tcagcctctt	120
cctcaacctc	ccaggacctc	tctggctcca	gccctctcca	cctccccagt	cttctcccc	180
gcctcagccc	catccgtgtc	atacctgccg	gggactgggt	gacagcttta	acaaggccct	240
ggagagaacc	atccgggaca	actttggagg	tggaaacct	gcctgggagg	aagagaat	300
gtccaaatac	aaagacagt	agaccgcct	ggtagagggt	ctggagggtg	tgtgcagcaa	360
gtcagacttc	gagtgccacc	gcctgctgga	gctgagttag	gagctgggtg	agagctgggtg	420
gtttcacaag	cagcaggagg	ccccggacct	cttcagtggt	ctgtgctcag	attccctgaa	480
gctctgctgc	cccgcaggca	ccttcggggc	ctcctgcctt	cctgtcctg	ggggaacaga	540
gaggccctgc	ggtggctacg	ggcagtgtag	aggagaagg	acacgagggg	gcagcgggca	600
ctgtgactgc	caagccgggt	acgggggtga	ggcctgtggc	cagtgtggcc	ttggctactt	660
tgaggcagaa	cgcaacgcc	gccatctggt	atgttcggct	tgttttggcc	cctgtgccc	720
atgtcagga	cctgaggaat	caaactgttt	gcaatgcaag	aagggtggg	ccctgcatca	780
cctcaaggt	gtagcattg	atgagtgtgg	ccagaggga	gccaactgtg	gagctgacca	840
attctgcgtg	aacctgagg	gtcctatga	gtgccgagac	tgtgccaagg	cctgcctagg	900
ctgcagtggg	gcagggccag	gtcgtgtaa	gaagtgtagc	cctggctatc	agcaggtggg	960
ctccaagtgt	ctcgatgtgg	atgagtgtga	gacagagggt	tgtccgggag	agaacaagca	1020
gtgtgaaaac	accgaggggc	gttatcgctg	catctgtgcc	gagggttaca	agcagatgga	1080
aggcatctgt	gtgaaggagc	agatcccaga	gtcagcaggc	ttcttctcag	agatgacaga	1140
agcagagtgt	gtggtgctgc	agcagatgtt	ctttggcatc	atcatctgtg	cactggccac	1200
gctggctgct	aagggcgact	tgggtgtcac	cgccatcttc	attggggctg	tggcgggcat	1260
gactggctac	tgggtgtcag	agcgcagtga	ccgtgtgctg	gagggttca	tcaagggcag	1320
ataatcgcg	ccaccacctg	taggacctcc	tcccaccac	gctgccccca	gagcttgggc	1380
tgccctcctg	ctggacactc	aggacagctt	ggtttatctt	tgagagtggg	gtaagcacc	1440
ctacctgcct	tacagagcag	cccagggtacc	caggccggg	cagacaaggc	ccctggggta	1500
aaaagtagcc	ctgaagggtg	ataccatgag	ctcttcacct	ggcggggact	ggcaggcttc	1560
acaatgtgtg	aatttcaaaa	gtttttcctt	aatggtggct	gctagagctt	tggccctg	1620
ttaggattag	gtggtcctca	caggggtggg	gccatcacag	ctccctcctg	ccagctgcat	1680
gctgccagtt	cctgttctgt	gttcaccaca	tccccacacc	ccattgccac	ttatttatct	1740
atctcaggaa	ataaagaaa	gtcttgaaa	gttaaaaggc	atcagtctta	ctacctgtcc	1800
caccaccccc	accttaggga	aatgtcctag	aatcctggga	aattgagggc	ttctttgatg	1860
gtgagtggag	aaaagataga	ggagaagggt	gcccctgaag	tgtgttagg	agaaggagga	1920
tagaggaatc	agccttagga	gggttccatg	ccagctgtca	tttggcaaag	gaccctggac	1980
agatgacttt	tgcctctgaa	cttcactctt	ctctttcctc	aaatgggctt	cataatgctt	2040
tccactcagg	cttaacatga	gaattaaatg	ag			2072

<210> 150

<211> 1251

<212> DNA

<213> Homo sapiens

<400> 150

gaccacgcg	tccgagcaaa	cccaggaagg	tgtggcgctc	ccgcttcg	ccaagatggt	60
gctggtgctg	cgccatcctt	tgtgtgcccg	ggaaaggggc	ttccgggagc	cgggtcgggg	120
gctcctgact	cgcactgggc	agcatgacgg	tgcgcgggct	gtcactgctg	tgcggggacc	180
tctggcgct	gtggctgctg	ctgaaggccg	gcgcagtacg	tggggcgcg	gcaggtcctc	240
gcctccccgg	aagggtgtgt	ggggcgacat	gcggggacgc	cgggcggggg	tggacgttct	300
gggccagcc	ctgtcctcag	aggctgctgg	ggcagaagcc	cggggctggg	ggatgccggg	360
gatgggtgtt	ggggtgggtg	cctccgagac	cagaggagcc	ctgttccttg	gcagggaagg	420
tgtgcacggg	ccttgcccga	tggatgggtt	agggccatgg	ccctggggct	cctggtgagc	480
agtggggccg	cctctgccct	tggcctgtga	gggactgtct	gtgctgggtc	cagaaggctg	540
ggatcacctt	tcactgggt	ctttgttctg	aggtttttca	tagacaggct	atgtggacaa	600
atgagggcag	cgccacgtc	tggctgggtg	aggggctgcg	gtcctcctt	ggaggggacg	660
cctggccact	gctgtcccca	caatggggcc	accctgggtg	caaggcgtga	caagctgccc	720
tctctaggta	agcaggactt	gggaggcccc	tggccaagcc	tgtggaccgg	gctgggcggc	780
ctctgtggtc	tcaggtttgg	gtgtgttttg	tctggtcagg	gctcaggggc	tgtgtgtcca	840
cactggcccc	atcctgacaa	ttggagcttt	ggggcaagg	ccctggagaa	ggggtcacgt	900
cgggaggaaa	cagcctgggt	tttgttgatg	cttttctaag	aatggagtac	tcgttttcaa	960
gagatttgtc	ctaattatat	tttccagcgg	gtacttatgc	caagtattga	tgaataattc	1020
ataaaataag	catctttgtg	aattttagt	aatcagacct	taactatcaa	cggcaatgaa	1080
tgaacatcta	aagttttcaa	ttttaaagta	aagaactggc	tgggtacagc	agttcacgcc	1140
tgtaatccca	gcactttggg	aggccaaggc	tagaggatcg	cttgagccca	ggagtttgag	1200

atcagcctgg gcaacatacc aagacctcat ctgttaaaaa aaaaaaaaaa a 1251

<210> 151

<211> 1539

<212> DNA

<213> Homo sapiens

<400> 151

cgatggcccc	gcggccgctc	tagaaagtcc	cgtttttttt	tttttttttt	tttttttttt	60
tttttagagta	cgttctgcat	tttatttytg	caggcaacac	tttgetcacc	agcaagaaca	120
cagcccragg	aagggaccca	ataacctttc	aaaacscaaa	ctgctkcctg	cggtgagggc	180
ccagggtcct	ccacggagag	gacaggcatc	ttcctttccc	accaggaagg	agtcagcccg	240
gagcctctgc	tatgtgcaag	gcggtgtgca	agcacccgct	gcrctyttt	gctgtctctt	300
ctttctcttt	ggggctgggc	tgggtgtgct	ttctgggtgct	gatgcttttg	cctgtgagggc	360
tgagcttggc	acctcgaccc	gttcaattac	agcaacgaag	aagccactgc	tgagtgtggt	420
ctcaggggag	gcccggaggc	agtgtctggc	acccggaac	gtgctcaggc	ctcgggtggg	480
ccaggcaggc	agggcgggag	ctagcctgaa	ggcgcccg	ttctgctgca	gcgcatctcg	540
caccacgtct	tcattctcct	cctggcagag	ggagcacgtg	gagtagacga	gccgctgcag	600
ggaaggga	tgtagcgct	ggcacagggc	tcgctgctgg	aacctgcca	gggcatgcag	660
acgcaccggg	ctaggtgtgc	ctgccccggg	ctcctccagc	tgtctgctcg	gcataccgca	720
gccactgcag	gaaggatcca	gcaggayrta	gtggacctca	ygrtagcgyg	gatcyraggg	780
ggagaccgcc	aggaagtctt	cctcagccag	yticacagcar	gagacgccag	ccrgggccag	840
cagcgtggcc	atggtatgcca	gccgcttgcc	atccagggtca	aaggcaaaga	tcttcccttg	900
gttcttcaga	agagcagcca	agtgaactgt	cttattgcct	ggggcgccac	aggcatcgat	960
gacatgggag	cctggcgggg	ggtccagcag	catggctggg	agacagctgg	ccctgtctctg	1020
cagaatgagg	tgtccggccc	ggtacagtgg	gtgttcacgc	agatctgtct	gggcgggaaa	1080
caccagcagc	tccggcatca	aggggtccag	gagaaaatgc	ttccccctga	gggctcgtaa	1140
gtcatcgagg	ctggaagccc	gacctgata	ggagaaacct	tgtctcttga	aataatcaac	1200
tacatcatcg	gagcaggtct	tgagagtgtt	cacacgcaca	aatcgaggca	gctgggaggc	1260
tggaccaggc	ctggatccca	cttccaacag	gtcctcattc	cggtctcacac	cccgatgaac	1320
cttgagccga	gccaactcag	ccttgagcct	cgcttggtgc	cgcccccaaca	gagccttcca	1380
tcggccccc	ccccctcgaa	agccctttcc	caacaacaac	tcatacacta	gcaccttggc	1440
caggtgcggc	gcctctagag	gatccctcga	ggggcccaag	cttaacgcgtg	catgcgacgt	1500
catagctctc	tccttagagt	gagtcgaatg	aggttcata			1539

<210> 152

<211> 2077

<212> DNA

<213> Homo sapiens

<400> 152

cccacgcgtc	cgcgacgcg	tgggcggacg	cgtgggtagg	ccgcgagctt	agtcctggga	60
gccgcctccg	tcgcgcgct	cagagccgcc	ctatcagatt	atcttaacaa	gaaaaccaac	120
tggaaaaaaa	aatgaaattc	cttatcttcg	catttttctg	tggtgttcac	cttttatccc	180
tgtgctctgg	gaaagctata	tgcaagaatg	gcatactctaa	gaggactttt	gaagaaataa	240
aagaagaaat	agccagctgt	ggagatgttg	ctaaagcaat	catcaacctc	gctgtttatg	300
gtaaagccca	gaacagatcc	tatgagcgat	tggcaacttc	ggttgatact	gttggaccca	360
gactgagtgg	ctccaagaac	ctagaaaaag	ccatccaaat	tatgtacca	aacctgcagc	420
aagatgggct	ggagaaagtt	cacctggagc	cagtggagaat	acccactgg	gagaggggag	480
aagaatcagc	tgtgatgctg	gagccaagaa	ttcataagat	agccatcctg	ggtcttggca	540
gcagcattgg	gactcctcca	gaaggcatta	cagcagaagt	tctggtgggtg	acctcttttcg	600
atgaactgca	gagaagggcc	tcagaagcaa	gagggaagat	tgttgtttat	aaccaacctt	660
acatcaacta	ctcaaggacg	gtgcaatacc	gaacgcaggg	ggcggtggaa	gctgccaaag	720
ttggggcttt	ggcatctctc	attcgatccg	tggcctcctt	ctccatctac	agtcctcaca	780
caggtattca	ggaataccag	gatggcgtgc	ccaagattcc	aacagcctgt	attacggtgg	840
aagatgcaga	aatgatgtca	agaatggctt	ctcatgggat	caaaattgtc	attcagctaa	900
agatgggggc	aaagacctac	ccagatactg	attccttcaa	cactgtagca	gagatcactg	960
ggagcaaata	tccagaacag	ggtgtactgg	tcagtggaca	tctggacagc	tgggatgtttg	1020
ggcagggtgc	ctggatgat	ggcggtggag	cttttatatc	atgggaagca	ctctcactta	1080
ttaaagatct	tgggctgcgt	ccaaagagga	ctctgcggct	ggtgctctgg	actgcagaag	1140
aacaaggtgg	agttggtgcc	ttccagtatt	atcagttaca	caaggtaaat	atttccaact	1200

acagtctggt	gatggagtct	gacgcaggaa	ccttcttacc	caactgggctg	caattcactg	1260
gcagtgaaaa	ggccagggcc	atcatggagg	aggttatgag	cctgctgcag	cccctcaata	1320
tcaactcagg	cctgagccat	ggagaaggga	cagacatcaa	cttttggatc	caagctggag	1380
tgcttgagc	cagtctactt	gatgacttat	acaagtat	cttcttccat	cactcccacg	1440
gagacacat	gactgtcatg	gatccaaagc	agatgaatgt	tgctgctgct	gtttgggctg	1500
ttgtttctta	tggtgttgca	gacatggaag	aaatgctgcc	taggtcctag	aaacagtaag	1560
aaagaaacgt	tttcatgctt	ctggccagga	atcctgggtc	tgcaactttg	gaaaactcct	1620
cttcacataa	caatttcac	caattcatct	tcaaagcaca	actctatttc	atgctttctg	1680
ttattatctt	tcttgatact	ttccaaattc	tctgattcta	gaaaaaggaa	tcattctccc	1740
ctccctccca	ccacatagaa	tcaacatag	gtagggatta	cagtgggggc	atttctttat	1800
atcacctctt	aaaaacattg	tttccacttt	aaaagtaaac	acttaataaa	tttttggag	1860
atctctgatt	tttatgtgtt	catttatgaa	catlaaatat	gaaaatatta	tggtttatat	1920
tattttattga	aggagtagat	gaattactca	actttagtat	gctcttaatt	gaatatatgg	1980
aggcatttga	ctttctaat	tgtatatatt	tatatattgt	gaatttttaa	aatgagcttt	2040
ggaatttttt	aatttataga	aaaaaaaaaa	aaaaaaa			2077

<210> 153

<211> 2108

<212> DNA

<213> Homo sapiens

<400> 153

ggcacgaggg	agacctaacc	acagtcacca	tgaagctggg	ctgtgtcctc	atggcctggg	60
ccctctacct	ttcccttgg	gtgctctggg	tggeccagat	gctactggct	gccagttttg	120
agacgctgca	gtgtgaggga	cctgtctgca	ctgaggagag	cagctgccac	acggaggatg	180
acttgactga	tgcaaggga	gctggcttcc	aggccaagc	ctacactttc	agtgaaccct	240
tccacctgat	tggttctcat	gactggctga	tctccaagg	tccagccaag	ccagtttttg	300
aaggggacct	gctggttctg	cgctgccagg	cctggcaaga	ctggccactg	actcaggtga	360
ccttctaccg	agatggctca	gctctgggtc	ccccggggcc	taacagggaa	ttctccatca	420
ccgtgggtaca	aaaggcgagc	agcggggcact	accactgcag	tggtcatctc	cagagccctg	480
gtcctgggat	cccagaaaca	gcactctgtt	tggtatcac	agccaagaa	ctgtttccag	540
cgccaattct	cagagctgta	cctcagctg	aacccaagc	aggaggcccc	atgacctga	600
gttgctcagc	aaagttggcc	ctgcagaggt	cagctgccc	cctcctcttc	tccttctaca	660
aggatggaag	gatagtgcaa	agcagggggc	tctcctcaga	attccagatc	cccacagctt	720
cagaagatca	ctccgggtca	tactgggtgt	aggcagccac	tgaggacaac	caagtttgga	780
aacagagccc	ccagctagag	atcagagtgc	agggtgcttc	cagctctgct	gcacctcca	840
cattgaatcc	agctcctcag	aaatcagctg	ctccaggaac	tgctcctgag	gaggccctg	900
ggcctctgcc	tccggccacca	accccatctt	ctgaggatcc	aggcttttct	tctcctctgg	960
ggatgccaga	tcctcatctg	tatcaccaga	tggccttct	tctcaaacac	atgcaggatg	1020
tgagagtcc	cctcgggtcac	ctgctcatgg	agttgaggga	attatctggc	caccggaagc	1080
ctgggaccac	aaaggctact	gctgaataga	agtaaacagt	tcattccatga	tctcacttaa	1140
ccaccccaat	aatctcgatt	ctttatcttc	tcttctgtc	ctgcacatat	gcataagtac	1200
ttttacaagt	tgtccagtg	ttttgttaga	ataatgtagt	taggtgagt	taaataaatt	1260
tatataaagt	gagaattaga	gtttagctat	aattgtgtat	tctctcttaa	cacaacagaa	1320
ttctgctgtc	tagatcagga	atttctatct	gttatatcga	ccagaatgtt	gtgatttaaa	1380
gagaactaat	ggaagtggat	tgaatacagc	agtctcaact	gggggcaatt	ttgccccca	1440
gaggacattg	ggcaatgttt	ggagacattt	tggtcattat	acttgggggg	ttgggggatg	1500
gtgggatgtg	tgtgctactg	gcattccagta	aatagaagcc	aggggtgccg	ctaaacatcc	1560
tataatgcac	agggcagtag	cccacaacga	aaaataatct	ggcccaaaat	gtcagttgta	1620
ctgagtttga	gaaacccag	cctaataaaa	ccctaggtgt	tggtgctctg	aatgggactt	1680
tgtcccttct	aattattatc	tcttccagc	ctcattcagc	tattcttact	gacataccag	1740
tctttagctg	tgtctatggt	ctgttcttta	gttctagtgt	gtatcccttc	aaaagccatt	1800
atgttgaaat	cctaattccc	aaggtgatgg	cattaagaag	tggtcctttg	ggaagtgatt	1860
agatcaggag	tgagagccc	tcattgattg	gattagtgc	cttattttaa	aaggcccccag	1920
agagctaact	caccttcca	ccatattgag	acgtggcaag	aagatgacat	gtatgagaac	1980
caaaaaacag	ctgtcgccaa	acaccgactc	tgtcgttgcc	ttgatcttga	acttccagcc	2040
tccagaacta	tgagaaataa	aattctgttg	tttgtaagct	aaaaaaaaaa	aaaaaaaaaa	2100
aaaaaaaa						2108

<210> 154

<211> 1146

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (5)..(5)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (857)..(857)

<223> n equals a,t,g, or c

<400> 154

tccancatta	tgggatacat	tgatgatcca	gacaaatatt	atcagggttt	tgaattgttg	60
ctgtcagcct	tgggtgatcc	ctcagaaaga	gtagttagt	ctacacatca	agtattttta	120
ccagcttacg	ctgcgtggac	tacagaactt	ggaaatttac	agtctcatct	tatacttaca	180
ctactgaaca	agattgaaaa	acttctcagg	gaaggagaac	atggactgga	tgaacacaaa	240
ctccacatgt	atctttctgc	cttgcagtc	ttgatcccat	ctctctttgc	attagtgcata	300
cagaatgcac	ctttctccag	caaagccaag	cttcatgggt	aagtgccaca	gatagaagtg	360
actaggtttc	ctcggcctat	gtcgcctctt	caagatgtgt	ccactattat	cgggaagtcgt	420
gagcaattgg	cagtgtctgt	gcaactttat	gactaccagc	tagaacaaga	gggtacaaca	480
ggctgggaga	gtttactgtg	ggttgtcaat	caattgtgtg	cacaacttat	agaaatagtt	540
ggcaaaatta	atgttacttc	aactgcctgt	gtccatgaat	tctccagatt	tttctggcgc	600
ctttgccgga	catttggcaa	aatttttaca	aacactaagg	taaaacctca	gttccaggag	660
attttaagac	tatctgaaga	aaacattgat	tcctcagcag	gaaatggggt	cctcactaaa	720
gctacagtcc	ccatttatgc	aacaggagtc	cttacgtgtt	atattcagga	agaagaccga	780
aaactgttag	ttggattcct	agaagatgta	atgacgctgc	tttcattatc	tcatgtctct	840
cttgatagcc	tgaagnttcc	ttttgtggaa	ttgggtgcaa	accaggccta	ccatgagtta	900
ctattaactg	ttttgkggta	tggkgtkgkc	catacttcag	cactcgtgag	gtgtactgct	960
gctagaatgt	ttgagctggt	ggtgaagggg	gtgaatgaaa	ctctggtagc	tcagaggggt	1020
gttcctgctc	tcattactct	ctccagtgc	cctgaaatct	ctgtcaggat	tgccacaatt	1080
ccagcctttg	gsactattat	ggaaacagta	attcaaagag	agttgctgga	aagagtgaaa	1140
atgcag						1146

<210> 155

<211> 1998

<212> DNA

<213> Homo sapiens

<400> 155

ggcacgagaa	caatttccct	tgtacataat	atacttatgt	acttatacca	ttgactctgt	60
aagataaaaag	tcttagaaaat	ggggttgcca	agtcaaagg	tctatgcatt	taacacaggg	120
aatgagtact	gtcacgtggc	ttctgaaact	gtttaccag	tttatgttcc	caccaacagt	180
gtctaattcc	catacctgtg	ctaggtatta	tgtctttaat	ttttgtctga	ttatttcatt	240
taattttaat	ttccattatc	actggtgagg	ttgggcttct	gttcagtttt	tttgtcattt	300
atgtttcttt	tgtgaattgc	cttttcttat	gctttgtgca	tttttctctt	ggggtttgtc	360
tttttaaaat	tgatatacag	gtgttctcta	taatatagat	attctgccac	tatatgcaaa	420
tgatcttcca	atttatttat	ttatttgaaa	cagagtttca	ctcttgtcac	caggttgagg	480
tgcagagggtg	cgactctggc	tcactgcaac	ctccacctcc	caagttcaag	cgattttcct	540
gcctcagcct	ccctagtaac	tgggattaca	ggtgccctgc	caccatgccc	ggctaatttt	600
tgtatttttg	gtagagacgg	ggttttgcca	tgttggccag	gctggcctcg	aactcctgac	660
ttcaggtgat	ctgccacct	cagcctccca	aagtgtctgg	attacaggcc	tgagctaccg	720
caccggcccc	aatttatctc	ttttaactta	gtttatgggt	cctttagctg	tacaaaagtt	780
actaattttt	agtcaaatat	ccagcttttc	ctttagggtc	tcttatatgt	cctgatccaa	840
ggattatttt	ttaaaaattc	ttccgtatct	tctctataaa	tattcatagg	ttactttaca	900
attagatttt	taatacatct	cctaactttt	tcataagta	tgaggatctc	atttttaaaa	960
aatggataac	cagttgtgcc	catatgtctt	ttccactcat	ctgaaatgcc	accattatca	1020
tattttcaat	tttcatgtgc	acgtgggtct	gttttcaaac	ttggagattc	tcttccactg	1080
atataatgtc	attcttgtgc	cagtgggtta	actgctattg	ctttatagta	tattttgata	1140
tcttcttttc	aaaaggatac	tcttgtgtat	tctttttttc	atcttgtgta	ttctcatcca	1200

ttttccagaa	aaccacagaa	tcaactttta	gtttcatttc	attaagtcag	attagtgaga	1260
gctgattttc	tgtgtatcat	gttcatttcag	aaacatagtc	tatctctcca	tttaggggca	1320
cttggtttat	attttctttc	taacacgtat	tttggtgggt	ttattgtacc	tttttttttt	1380
ttactttcag	attcaggggg	gtgcacgtgc	aggtttgtta	cctgagtata	cgatatgata	1440
ctgaggttgg	agtatgaatg	atgccattac	ccaggtagtg	ggcataatac	ccaatagtta	1500
gtttttcaac	ccttgccctt	ctccctctct	cctccctcta	gtagtcccca	gtttctaata	1560
ctgccatctc	catgttcatg	agaacccagt	gttttagctcc	cacttataag	tgagagcatg	1620
ttgcatttgg	ttttctgttc	ctgccatata	ctttgtaggg	acatggatga	aattggaaaa	1680
catcattctc	agtaaactat	cgcaagaaca	aaaaaccaaa	caccacatat	tctcactcat	1740
aggtgggaat	tgacaatggg	aacacatgga	cacaggaagg	ggaacatcac	actctgggga	1800
ctgttgtggg	gttgccggag	gggggagggg	tagcattggg	agatatacct	aatgctagat	1860
gacgagttag	tgggtgcagt	gcagcagcat	ggcacatgta	tacatatgta	actaacctgc	1920
acaatgtgca	catgtaccct	aaaacttaaa	gtataatata	aaaaaaaaaa	agaacaaaac	1980
ttaaaaaaaa	aaaaaaaa					1998

<210> 156

<211> 970

<212> DNA

<213> Homo sapiens

<400> 156

ctcgtgccga	attcggcacg	aggtgccag	gctctcaggg	cagaggggtcc	agtgtgatca	60
ctttgcatgg	cctctctccc	ctcctgagct	tgtgccaggg	ccccagggct	gacctggaga	120
ggaaaawggc	agaggggtgaa	gatgggggtgt	ctgggtttggg	gaccatcctg	gcccccttg	180
tcactgttgg	catctcttct	gcacagtggc	attgctggga	gggtgcttact	gtgcctattc	240
aaggggctgg	cagccgcagc	ctcactgcag	atcagggact	tggcttcccg	gttgaccaca	300
ggtccaagaa	cctgcagggg	ccagcctccc	ccccatcccc	agtcttcccc	accctggccc	360
ggcctccag	gtgcagaaac	atgcaggccc	ctctccagga	ctgtgggagg	agtgtgtccc	420
tcagactggc	ctgtgtcctg	gctcctctta	ccacctcttc	cagaggttgt	cacctgcagc	480
tgccccagga	taaaggcaag	gccagagagg	actcctgaac	tcctgtgtgc	ctgggggtggc	540
agggggcaaac	atagccaact	ggtggcctga	gcggggccat	ggtgargaca	cccttgggtgg	600
atgtgtccac	atcaagctgg	gargtgacac	tgaggatgca	ttagtctgca	gcgtatgata	660
aaaacggcat	ttcaggccag	gcgtgggtggc	tcactgcctgt	caccccagca	ccttgggagg	720
ccgaggtggg	cagatcacat	gaggtcagga	ctttgagacc	agcctggcca	acatggtgaa	780
aactcatctg	tactaaaaaa	acaaaaatta	tgtgggttgg	tgggtgtgtgc	ctgtaatccc	840
agctacttgg	gaggctgagg	caggagaatc	acttgaacct	gggaggcgga	ggctacaacg	900
agccgagatt	gcaccactgc	actccagcct	gatccgtctc	aaaaaaaaaa	aaaaaaaaaa	960
aaaaactcga						970

<210> 157

<211> 1782

<212> DNA

<213> Homo sapiens

<400> 157

tgccgagcct	ctttggtagc	aggaggtgg	aagaaaggac	agaagtagct	ctggctgtga	60
tggggatctt	actgggcctg	ctactcctgg	ggcacctaac	agtggacact	tatggccgtc	120
ccatcctgga	agtgccagag	agtgtaacag	gaccttggaa	aggggatgtg	aatcttccct	180
gcacctatga	ccccctgcaa	ggctacaccc	aagtcttggg	gaagtggctg	gtacaacgtg	240
gctcagaccc	tgtcaccatc	tttctacgtg	actcttcttg	agaccataatc	cagcaggcaa	300
agtaccaggg	cgcctgcatt	gtgagccaca	aggttccagg	agatgtatcc	ctccaattga	360
gcacccttga	gatggatgac	cggagccact	acacgtgtga	agtcacactg	cagactcctg	420
atggcaacca	agtcgtgaga	gataagatta	ctgagctccg	tgtccagaaa	ctctctgtct	480
ccaagcccac	agtgacaact	ggcagcgggt	atggcttccac	ggtgccccag	ggaatgagga	540
ttagccttca	atgccaggct	cggggttctc	ctcccatcag	ttatatattg	tataagcaac	600
agactaataa	ccaggaaacc	atcaaagtag	caaccctaag	taccttactc	ttcaagcctg	660
cgggtgatag	cgactcaggg	tcctatttct	gcactgccaa	gggcccagggt	ggctctgagc	720
agcacagcga	cattgtgaag	tttgtggtea	aaagctactc	aagactactc	aagaccaaga	780
ctgaggcacc	tacaaccatg	acataccctc	tgaagcaaac	atctacagtg	aagcagtcct	840
gggactggac	cactgacatg	gatggctacc	ttggagagac	cagtgtctggg	ccaggaaaga	900
gcctgcctgt	ctttgccatc	atcctcatca	tctccttgtg	ctgtatgggtg	gtttttacca	960

tggcctatat	catgctctgt	cggaagacat	cccaacaaga	gcatgtctac	gaagcagcca	1020
gggcacatgc	cagagaggcc	aacgactctg	gagaaacccat	gaggggtggcc	atcttcgcaa	1080
gtggctgctc	cagtgatgag	ccaacttccc	agaatctggg	caacaactac	tctgatgagc	1140
cctgcatagg	acaggagtac	cagatcatcg	cccagatcaa	tggcaactac	gcccgcctgc	1200
tggacacagt	tctcttgat	tatgagtttc	tggccactga	gggcaaaagt	gtctgttaaa	1260
aatgccccat	taggccagga	tctgctgaca	taattgccta	gtcagtcctt	gccttctgca	1320
tggccttctt	ccctgctacc	tctcttctctg	gatagcccaa	agtgtccgcc	taccaacact	1380
ggagccgctg	ggagtcaactg	gctttgccct	ggaatttgcc	agatgcatct	caagtaagcc	1440
agctgctgga	tttggtctctg	ggcccttcta	gtatctctgc	cgggggcttc	tgggtactct	1500
ctctaaatac	cagagggaag	atgcccatag	cactaggact	tgggtcatcat	gcctacagac	1560
actattcaac	tttggcatct	tgccaccaga	agacccgagg	gaggtcagc	tctgccagct	1620
cagaggacca	gctatatcca	ggatcatttc	tctttcttca	gggccagaca	gcttttaatt	1680
gaaattgtta	tttcacaggc	cagggttcag	tctgtctcct	ccactataag	tctaattgttc	1740
tgactctctc	ctgggtgctca	ataaatatct	aatcataaca	gc		1782

<210> 158

<211> 1205

<212> DNA

<213> Homo sapiens

<400> 158

ggcagagctt	ttgtgcagca	ccctttaaag	ggtgactcgt	cccacttggt	ttctctctcc	60
tggtgcagag	ttgcaagcaa	gtttatcgga	gtatcgccat	gaagttcgtc	ccctgcctcc	120
tgtgtgtgac	cttgtcctgc	ctggggactt	tgggtcaggc	cccaggagca	aagcaaggaa	180
gcaactggga	ggaattccat	ttccagactg	gagggagaga	ttcctgcact	atgctgccca	240
gcagcttggg	gcaagggtgct	ggagaagtct	ggcttcgcgt	cgactgccgc	aacacagacc	300
agacctactg	gtgtgagtac	agggggcagc	ccagcatgtg	ccaggctttc	gctgctgacc	360
ccaaatctta	ctggaatcaa	gccctgcagg	agctgaggcg	ccttcacccat	gcgtgccagg	420
gggccccggt	gcttaggccca	tccgtgtgca	gggaggctgg	accccaggcc	catatgcagc	480
aggtgacttc	cagcctcaag	ggcagcccg	agcccaacca	gcagcctgag	gctgggacgc	540
catctctgag	gccaagggcc	acagtgaaac	tcacagaagc	aacacagctg	ggaaaggact	600
cgtatggaaga	gctgggaaaa	gcaaaaccca	ccaccgcacc	cacagccaaa	cctaccagc	660
ctggagcccg	gcccggaggg	aatgaggaag	caaagaagaa	ggcctgggaa	cattgttgga	720
aacccttcca	ggccctgtgc	gcctttctca	tcagcttctt	ccgagggtga	cagggtgaaag	780
acccctacag	atctgacctc	tccctgacag	acaaccatct	ctttttatat	tatgccgctt	840
tcaatccaac	gttctcacac	tggagaaga	gagtttctaa	tcagatgcaa	cggcccaaat	900
tcttgatctg	cagcttctct	gaagtttgga	aaagaaacct	tcctttctgg	agtttgacga	960
gttcagcaat	atgataggga	acagggtgctg	atggggccaa	gagtgacaag	catacacaac	1020
tacttattat	ctgtagaagt	tttgctttgt	tgatctgagc	cttctatgaa	agtttaata	1080
tgtaacgcat	tcataaat	ccagtgttca	gtaaatagca	gctatgtgtg	tgcaaaataa	1140
aagaatgatt	tcagaaaaaa	aaaaaaaaaa	aaactcgggg	ggggccggta	cccattygcc	1200
ccaag						1205

<210> 159

<211> 809

<212> DNA

<213> Homo sapiens

<400> 159

ggcacgagga	gaatcatggg	cctctggctg	ggcatgctgg	cctgtgtctt	cctggcaact	60
gctgcctttg	ttgcttatac	tgcccggctg	gactggaagc	ttgctgcaga	ggaggctaag	120
aaacatttcag	gccggcagca	gcagcagaga	gcagagagca	ctgcaaccag	acctgggcct	180
gagaaagcag	tcctatcttc	agtggctaca	ggcagttccc	ctggcattac	cttgacaacg	240
tattcaagg	ctgagtgcc	cgtggacttc	ttcaggactc	cagaggaggc	ccacgccctt	300
tcagctccta	ccagcagact	atcagtga	cagctgggtca	tccgccgtgg	ggctgctctg	360
ggggccggcgt	cagccacact	gatgggtggg	ctcacgggtca	ggatcctagc	caccaggcac	420
tagcaagaa	gcttggaat	agaaagccag	gagtggtgtg	ccccagtatg	caaacacacc	480
acggtctgcc	ctgcaaaaac	accaatgggg	tctagtgcag	gtggacactt	tgaaccactc	540
ctcaaaaaaa	gaactttggc	tgattccttg	tgggtgacact	cagaggggtc	tgaacagact	600
tgacaattct	gttctgtgtca	agctggagtt	ttcttctgtg	acttggactg	ctctacagaa	660
gacatcagcc	aactgcacga	gtcagagtcc	agggtattgtc	actattatta	ataatgtaaa	720

tggcttcaaa	tgggacactg	cagataaaat	cacaaaaaac	actgttatat	taaagattac	780
acatttcctg	gaaaaaaaaa	aaaaaaaaaa				809

<210> 160
 <211> 1151
 <212> DNA
 <213> Homo sapiens

<400> 160						
ggcacgagtg	tcaatgaaag	tgttttcta	gcaactgcga	ttgactccca	gatagctaga	60
agtttgcaca	tcccactcac	ccaggatata	gctgggtgacc	caagctatga	aattagcaaa	120
cagagactca	gtattgtcat	tggcgtgggt	gctggcatta	tgacgggtgat	tctaatacatc	180
ttaattgtag	tgatggcaag	gtactgcagg	tccaaaaata	aaaatggcta	tgaagccggc	240
aaaaaagatc	acgaagactt	ttttacaccc	caacagcatg	acaaatctaa	aaagcctaaa	300
aaggacaaga	aaaacaaaaa	atctaagcag	cctctctaca	gcagcattgt	caactgtggag	360
gcttctaagc	caaattggaca	gaggatgat	agtgtcaatg	agaagctgtc	agacagccca	420
agcatggggc	gatacaggtc	cgtaaatggt	gggcccggca	gtcctgacct	ggcaaggcat	480
tacaaatcta	gttccccatt	gcctactgtt	cagcttcac	cccagtcacc	aactgcagga	540
aaaaaacacc	aggccgtaca	agatctacca	ccagccaaca	catttgtggg	agcaggagac	600
aacatttcaa	ttggatcaga	tcaactgtct	gagtacagct	gtcaaaccac	taacaagtac	660
agcaaacaga	tgctgtctaca	tccatacatt	actgtgtttg	gctgaattcc	actctaata	720
gatgtcccat	tatgcaccat	actgtgatga	cctttctact	ccgaaacctg	ctggagcctg	780
cccttgcccg	tgggtgtgca	gccaatcact	gcttgttcca	cttgttgtac	attttatttt	840
tgagtctttt	tctttctcat	atacagaaaa	atagtatgaa	aataaaaata	atgtatgaaa	900
cagtattaat	gcagaaatgt	gctactaatg	gatgtctgag	tcaccagaaa	ttccattctt	960
aaagaggcgg	ttagcaccta	ttagacgtaa	cagtgtatgtc	ttttaaaaaa	tccaaaagca	1020
tattgcaaca	ataagtttga	gactttgtgt	gaacaaaggg	aaattcagcc	tcttatgtct	1080
ttgtctttaa	tacattaaat	actgattttg	aataaaaaatc	taaattgatc	aataaaaaaa	1140
aaaaaaaaaa	a					1151

<210> 161
 <211> 1303
 <212> DNA
 <213> Homo sapiens

<400> 161						
aggttaaatg	cgactctttc	taacctttgt	tatttttgaaa	gttattctga	tattcctatc	60
cagttgtgcc	tcatttacta	gaaatttgct	cacatggcca	aatgatgtat	ccacagaaca	120
atltgaaact	agaccttttg	gaagcgaact	cctacaaact	gtcatcaatg	ttagcagaac	180
ttgagcaaa	acctcaaccc	agccatcctt	gtagtaattc	catcttcagg	tggaggggaaa	240
aggtaacatt	taaggagact	ggttgtaatt	tcttgattgg	gcctgctggg	tggagtggct	300
taaagtagca	tcagggcaaa	aaagggtgta	ggaattctat	gtgatattaa	tattcatgca	360
gttagttaag	aagataaatg	ttttwatatt	tcttttgagc	acaataacaa	gagctagaca	420
aaaccgaata	cattctgtgt	acaccaaact	tctatgagaa	gctaaaaaac	acttttgatt	480
tcttctttct	catcatacct	gaatttcac	ccttggtatg	gcttttacag	taaaatttct	540
attaaattga	aattttaata	ttcgttcaga	cctaaattat	aagattttgt	ggtatgtatt	600
agtctcatct	gtttaagatg	gtgcctaatt	cagataatgc	atcagtacag	ctctgaaatg	660
ctttagtagc	tttttattac	tgatcagaag	ggggaactgt	aatcatcttg	tgaagggaca	720
gttttctaag	gctcaagagc	tcgaaaacaa	tctcaatcat	ttacagggtt	gtgatcattt	780
cacttgcat	aagccaacta	aagttgtatt	tgtaaaagta	atgctatgaa	tattactatt	840
tgacctagac	acatagggtta	gaattggaaa	cacaggctat	aaagtatagt	aatttgttaa	900
ttgtgaaaat	attaaggctt	caactcaaaa	ctgaaacaca	gtagggctta	gaaatctttg	960
aattatttat	acccctcagt	ttaaaaactt	ccagtcaggg	cgcagtggtt	catgcctgta	1020
atcccagaac	tttgggaggc	caaggcaggc	ggatcacctg	aggtcaggag	ttcgagagca	1080
gcctggctga	cacgttgaaa	ccccgtctct	actaagaata	caaaaattag	ccaggcatgg	1140
tgggtggcac	ctgtaatccc	agctacgggg	gaggctgagg	caggagaatc	acttgaaccc	1200
gggaggtgga	ggttgtagtg	ggccaagatc	atgccactgc	actccagcct	gggtgaacag	1260
ggcaagactc	tgtctaaaaa	aaaaaaaaaa	aaaaactcgt	agg		1303

<210> 162
 <211> 4412

<212> DNA

<213> Homo sapiens

<400> 162

aacattagat	ctcaatgaaa	accagaatgg	aaccctttca	ctatcataaa	ctcatttata	60
aaagtgccca	tgatgaatag	caagaagtac	ccagtggccc	atctcattga	ccaaacttag	120
aaagccaagg	tggggcatct	gcagctctcc	cacaatctga	gtttgtgttg	atccttgtac	180
cccacaacct	gaaacatctt	cttatatata	tcgagcgagc	tctcagccct	tctgttttca	240
aggccatcat	ggagaaactg	gagatgtcca	agttccagcc	cactctccta	acactacccc	300
gcatcaaaga	gactaagcca	gactatgggg	gaaagggaga	taagaaggat	cctggaactt	360
taaagaaggac	aagagtgaga	ttcagaaatc	gccaggactg	gactttaagg	gacgtcctgt	420
gtcagcacaa	gggactggca	cacacagaca	cacgagaccg	aggagaaact	gcagacaaat	480
ggagatacaa	agacttagaa	ggacagctcc	tttcacctca	tcctacttgt	ccagaaggta	540
aaaagacaca	gccagaaaga	aaaggcatcg	gctcagctct	cagatcagga	caggctgtgg	600
atctgtggcg	gtactctgaa	agctggagct	gcagcacacc	ccttttgtat	tgctcacccct	660
cggtaaagag	agagagggct	gggaggaaaa	gtagttcatc	taggaaactg	tcctgggaac	720
caaacttctg	atttcttttg	caacctctg	cattccatct	ctatgagcca	ccattggatt	780
acacaatgac	atggagaatg	ggaccccggt	tcactatgct	gttggccatg	tggctagtgt	840
gtggatcaga	acccaccccc	catgccacta	ttagaggcag	ccacggagga	cggaaaatgc	900
ctttgtgttc	tccggacagc	agtaggccag	ctcggtttct	gaggcacact	gggaggctct	960
gcggaattga	gagatccact	ctggaggaac	caaaccttca	gcctctccag	agaaggagga	1020
gtgtgcccg	gttgagacta	gctcgcccaa	cagagccgcc	agcccgcctg	gacatcaatg	1080
gggcccgcgt	gagacctgag	caaagaccag	cagccagggg	ctctccgcgt	gagatgatca	1140
gagatgaggg	gtcctcagct	cggtcagaa	tggtgcgttt	cccttcgggg	tccagctctc	1200
ccaacatcct	tgccagcttt	gcaggggaaga	gcagagtatg	ggtcatctca	gcccctcatg	1260
cctcgggaagg	ctactaccgc	ctcatgatga	gcctgctgaa	ggacgatgtg	tactgtgagc	1320
tggcggagag	gcacatccaa	cagattgtgc	tcttccacca	ggcagggtgag	gaaggaggca	1380
aggtgagaag	gatcaccagc	gagggccaga	tcctggagca	gcccctggac	cctagcctca	1440
tccttaagct	gatgagcttc	ctgaagctgg	agaagggcaa	gtttggcatg	gtgctgtgta	1500
agaagacgct	gcaggtggag	gagcgctatc	catactccgt	taggctggaa	gccatgtacg	1560
aggtcatcga	ccaagggccc	atccgtagga	tcgagaagat	caggcagaag	ggctttgtcc	1620
agaaatgtaa	ggcctctggt	gtagagggcc	aggtgggtgg	ggaggggaat	gacggtggag	1680
ggggagcagg	aaggccaagc	ctgggcagcg	agaagaagaa	agaggaccca	aggagagcac	1740
aagtcccacc	aaccagagag	agtcgggtga	aggtcctgag	aaaactggcc	gccactgcac	1800
cagctttgcc	ccaacctccc	tcaaccccca	gagccaccac	ccttcctcct	gccccagcca	1860
caacagtgc	tcggtccacg	tcccggggcg	taacagttgc	tgcaagacct	atgaccacca	1920
ctgcctttcc	caccacgcag	aggccctgga	ccccctcacc	ctcccacagg	ccccctacaa	1980
ccactgaggt	gatcactgcc	aggagaccct	cagtttcaga	gaatctttac	cctccatccc	2040
ggaaggatca	gcacagggag	aggccacaga	caaccaggag	gcccagcaag	gccaccagct	2100
tggagagctt	cacaaatgcc	cctcccacca	ccatctcaga	acccagcaca	agggctgtctg	2160
gcccaggccg	tttccgggac	aaccgcatgg	acagggcgga	acatggccac	cgagacccaa	2220
atgtggtgcc	aggtcctccc	aagccagcaa	aggagaaacc	tcccaaaaag	aaggcccagg	2280
acaaaattct	tagtaatgag	tatgaggaga	agtatgacct	cagccggcct	actgcctctc	2340
agctggagga	cgagctgcag	gtggggaaatg	ttccccttaa	aaaagcaaag	gagtctaaaa	2400
agcatgaaaa	gcttgagaaa	ccagagaagg	agaagaaaaa	aaagatgaag	aatgagaacg	2460
cagacaagtt	acttaagagt	gaaaagcaaa	tgaagaagtc	tgagaaaaag	agcaagcaag	2520
agaaaagagaa	gagcaagaag	aaaaaaggag	gtaaaacaga	acaggatggc	tatcagaaac	2580
ccaccaacaa	acacttcacg	cagagtccca	agaagtccgt	ggccgacctg	ctggggctcct	2640
ttgaaggcaa	acgaagactc	cttctgatca	ctgctcccaa	ggctgagaac	aatatgtatg	2700
tgcaacaacg	tgtatgaat	ctggaaagtt	tctgcaagat	ggctaccagg	aaaatctctg	2760
tgatcaccat	cttcggccct	gtcaacaaca	gcaccatgaa	aatcgaccac	tttcagctag	2820
ataatgagaa	gcccattgca	gtggtggatg	atgaagactt	ggtagaccag	cgtctcatca	2880
gcgagctgag	gaaagagtac	ggaatgacct	acaatgactt	cttcatgggtg	ctaacagatg	2940
tggatctgag	agtcaagcaa	tactatgagg	taccaataac	aatgaagtct	gtgtttgatc	3000
tgatcgatac	tttccagtc	cgaatcaaag	atatggagaa	gcagaagaag	gagggcattg	3060
tttgcaaaga	ggacaaaaag	cagtccctgg	agaacttcct	atccagggtc	cgggtggagga	3120
ggaggttgct	gtgatctct	gtccttaacg	atgaagactg	ggcctattca	cagcagctct	3180
ctgccctcag	tggtcaggcg	tgcaattttg	gtctgcgcca	cataaccatt	ctgaagcttt	3240
taggcgttgg	agaggaagtt	gggggagttg	tagaactgtt	cccaattaat	gggagctctg	3300
ttgttgagcg	agaagacgta	ccagcccatt	tggtgaaaga	cattcgtaac	tattttcaag	3360
tgagcccggga	gtactttctc	atgcttctag	tcggaaaaaga	cggaaatgtc	aaatcctggt	3420

atccttcccc	aatgtggtcc	atggtgattg	tgtacgattt	aattgattcg	atgcaacttc	3480
ggagacagga	aatggcgatt	cagcagtcac	tggggatgcg	ctgcccagaa	gatgagtatg	3540
caggctatgg	ttaccatagt	taccaccaag	gataccagga	tggttaccag	gatgactacc	3600
gtcatcatga	gagttatcac	catggatacc	cttactgagc	agaaatatgt	aaccttagac	3660
tcagccagtt	tcctctgcag	ctgctaaaaac	tacatgtggc	cagctccatt	cttcacact	3720
gcgtactaca	tttccctgct	ttttctttca	agtgttttct	aagactaaat	aaatagcaaa	3780
ctttcaccta	ttcatgagtt	attattgaaa	cctcaaataca	taaagacatt	taaaagaatt	3840
gtttttctaa	ctggaggggc	tctagtgtcta	aataatagta	ctgaaaattg	atattatttt	3900
ccttttctta	tatgaaggac	cttattttggc	atataaaatt	ttataaaata	tgtattttaa	3960
gctttttctt	attttttgta	ttaatttggt	agtgaaaact	ctgttaaaga	tcacaccaca	4020
atgttttcaa	gaaacatctg	aaaagataaa	acaaagaaca	aataacttat	aatacttact	4080
taaatgaca	ctttttgaaa	tgccagtcctg	aaaataatta	agatatctct	gctttgtatg	4140
agtttctttt	atgaaacttg	ataccacggg	gtccagtaaa	tattggccac	aaaagccaga	4200
gaaagtacca	agcccagctt	tgttatcata	gccacttcct	gccctgcttc	tgttattttt	4260
agtgtttttt	cagatataaa	tcgggggtcca	ggaaatcctc	accagaatct	ggcactgcag	4320
ccaaaggcga	tacttccaga	gttctagtag	gctgctatgg	aatttctggc	atgaaaattc	4380
ttgacccctc	acactttacc	cctgtacag	ca			4412

<210> 163

<211> 1907

<212> DNA

<213> Homo sapiens

<400> 163

ggcacagggg	aatcatcggtg	tgatgtgtgt	gctgcctttg	tgagtgtgtg	gagtcctgct	60
caggtgttag	gtacagtggtg	tttgatcggtg	gtggccttgag	gggaaccctt	gttcagagct	120
gtgactgcgg	ctgcactcag	agaagctgcc	cttggtctgct	cgtagcgccg	ggccttctct	180
cctcgtcatc	atccagagca	gccagtgtcc	gggaggcaga	aggtaccggg	gcagctactg	240
gaggactgtg	cgggcctgcc	tgggctgccc	cctccgccgt	ggggccctgt	tgctgctgtc	300
catctatttc	tactactccc	tcccaaatgc	ggtcgccccg	cccttcactt	ggatgcttgc	360
cctcctgggc	ctctcgcagg	caactgaacat	cctcctgggc	ctcaagggcc	tggcccccagc	420
tgagatctct	gcagtgtgtg	aaaaagggaa	tttcaacgtg	gcccattgggc	tggcatggtc	480
atattacatc	ggatatctgc	ggctgatcct	gccagagctc	caggcccggg	ttcgaactta	540
caatcagcat	tacaacaacc	tgtctacggg	tgctagtgagc	cagcggtgtg	atattctcct	600
cccattggac	tgtgggggtg	ctgataacct	gagtatggct	gaccccaaca	ttcgcttcct	660
ggataaactg	ccccagcaga	cgggtgaccg	tgtctggcatc	aaggatcggg	tttacagcaa	720
cagcatctat	gagcttctgg	agaacgggca	gcgggcgggc	acctgtgtcc	tggagtacgc	780
caccccttgc	cagactttgt	tggccatgtc	acaatacagt	caagctggct	ttagcgggga	840
ggataggctt	gagcaggcca	aactcttctg	cgggacactt	gaggacatcc	tggcagatgc	900
ccctgagctc	cagaacaact	gccgcctcat	tgcctaccag	gaacctgcag	atgacagcag	960
cttctcgtgc	tcccaggagg	ttctccggca	cctgcggcag	gaggaaaagg	aagaggttac	1020
tgtgggcagc	ttgaagacct	cagcgggtgc	cagtacctcc	acgatgtccc	aagagcctga	1080
gctcctcatc	agtgggaatg	aaaagccccc	cctctccgc	acggatttct	cttgagacct	1140
aggggtcacca	ggccagagcc	tccagtggte	tccaagcctc	tggactgggg	gctctcttca	1200
gtggctgaat	gtccagcaga	gctatcttcc	tccacagggg	gccttgccag	gaagggtcca	1260
ggacttgaca	tcttaagatg	cgtcttgtcc	ccttggggca	gtcatttccc	ctctctgagc	1320
ctcgggtgtc	tcaacctgtg	aatggggatc	ataatcactg	ccttacctcc	ctcacgggtg	1380
ttgtgaggac	tgagtgtgtg	gaagtttttc	ataaactttg	gatgctagtg	tacttagggg	1440
gtgtgccagg	tgtctttcat	ggggccttcc	agaccactc	cccacccttc	tccccttctc	1500
ttgcccgggg	acgccgaact	ctctcaatgg	tatcaacagg	ctccttcgcc	ctctgggtcc	1560
tggctcatgt	ccattattgg	ggagccccag	cagaagaatg	gagaggagga	ggaggctgag	1620
ttttgggtat	tgaatccccc	ggctcccacc	ctgcagcatc	aagggttgcta	tggactctcc	1680
tgcggggcaa	ctcttgcgta	atcatgacta	tctctaggat	tctggcacca	cttcttctcc	1740
tggcccctta	agcctagctg	tgtatcggca	ccccaccctc	actagagtac	tccctctcac	1800
ttgcggtttc	cttatactcc	acccctttct	caacgggtcct	tttttaaagc	acatctcaga	1860
ttaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaggg	cggccgcg		1907

<210> 164

<211> 861

<212> DNA

<213> Homo sapiens

<400> 164

gaattcggca	cgagcctgag	tcaacttgat	atccaagctt	tttacttcaa	ttatctggca	60
agattacata	gactgtcaaa	gtttgtgaaa	gttttagcaag	aaaactgtct	tactcacaga	120
accacaggac	taactgactg	aaccacactc	caccatttgc	ccctatttcc	aggcggtatg	180
gtcaccctgt	agtttctaata	ctgtatagat	gtgtagagca	tgcctcttcc	ctcttccctt	240
ccccccctg	ttttcccttc	ctcttgccct	ttcttaatgt	ctgtytctat	tggcttcttg	300
atcttggctt	ttaatgttca	tccttaagct	tgettctctc	ttcagactac	tgattcagcc	360
tcttgcattt	tctttcaact	tgggccaaaa	aaacaggcaa	cattttcttc	ctccactacc	420
tcatacatcat	ccaatttatt	ccttttagttt	atattaccac	aactctccta	aacgtcccaa	480
gtctattatt	aagtctaaca	acttagcttc	gaacctcaat	ccaagcatct	gacaacacac	540
tgaaatgtgc	aagcaagagt	cccwatggcc	gggtgcagtg	gctcatgcct	gtaatcccag	600
cactttggga	ggccaagggtg	ggatcacctg	aggctcgggag	ttcgggacca	gcctggccag	660
tatggtgaag	ccatgtctmw	actaaaaata	caaaattagc	cggacattgt	ggtgcacgtc	720
tgtcatccca	gcaaggcagg	cgaatcgctt	gaacccgga	ggcggagggt	gcggtgagcc	780
gggatcgtgc	cattgcactc	cagcctggtc	aacagagcga	gactccgcct	cattaaaaaa	840
aaaaaaaaa	aaaactcgta	g				861

<210> 165

<211> 587

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)..(1)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (587)..(587)

<223> n equals a,t,g, or c

<400> 165

natttctcac	aatgacaaat	tctcaaatat	tgctaatagt	actgtggatt	ttcctacatt	60
ggtaaatgga	aggaattgct	aaatgctgaa	ttcagcaacc	agtttgagat	tggtgaaaat	120
aaagattggt	cttttttcaa	tgcaagttca	cagatcactg	gagttctagc	tacagtttgt	180
tctagaccag	agggtgcaga	tattttttgtc	ctataaagag	acacatgggt	aatatttttg	240
gctttgtgag	ttgtatagtt	ttccgttgta	gctgttcagc	tctgctacat	gaaagcaacc	300
atagaccata	ccttaacaag	tggtcacttt	tgagtaccaa	taaaacttta	tttagaaata	360
acagagggtc	ggatttgggtc	ctagtttgc	gaaccctttt	ctagatgaag	gctcctcttg	420
ccaagactgg	ctccctacct	tggctgacaa	attctcactt	tgggacttag	tcattgttgc	480
tgctctctgt	tattttgcat	gtcttttctc	atgttttaggt	gctgtgtctt	aatacttttt	540
tcttacattt	aatttaacaa	tcattactga	gcgctgggtat	gtctagn		587

<210> 166

<211> 477

<212> DNA

<213> Homo sapiens

<400> 166

gaattcggca	cgaggtgagt	atggcttttg	tcttccatct	tgctcagggt	actttggaac	60
cgctatacat	tgcaggagct	tagcttctgg	ttaccatggt	ttgcttccag	agcaacaagc	120
ctagtacttc	aacatggaga	caattatctt	ttgtttttgt	ttgtttttgt	ttgtttttgtc	180
ttggccatgc	ctttttgagt	ttaccttttt	atattttgtc	catcattgcc	atgtgttttg	240
agcagtgggc	gttccataac	atgaactcac	tgtaccatca	cgaatgggaa	gtaaggggaa	300
accttatcca	tgtggatttt	actcttccct	gattccctaa	attgggtttg	caaaatacta	360
ctgtgcactt	tcttgatgat	tcgggcttat	ctttatgact	gtctgtkttt	gtgtcagact	420
gtaaagaagt	ataaaagtct	ttagcttgaa	aaaaaaaaa	aaaaaaaaa	aactcga	477

<210> 167

<211> 1930

<212> DNA

<213> Homo sapiens

<400> 167

```

ggcacgagca gaaatgaaaa attacttgag tgggatgagt aggaaaaaaa gtggtagtgt      60
cattcaattc cagaggaaga gatgaattta atgggtgaggt tactggcatt gggactaata      120
tcagggatga tgtctaatat tactcaatca cattcaagta aaatatcagc ctttggtatc      180
ttcattggac cagaacagtt tcttttagatc ttcttatttc tctttcaagc ttcaacctta      240
aataataggc cattgtgtag cagaaaaaac tttaaactta gaagtagaaa tclataatca      300
aatcctcagc caacttaaaa acagttgtgt gaccttggat aagtcccata gccggactgc      360
attctctaaa ccagcagcta taacgtttcc tacctcatta gagtgtggtg tgaatgaaaa      420
tgtgaagaat gcctaaaaca gagtccagcc ttgaatgcat tagaaagttt caggcagcca      480
ctcattccat caccctgtct cactctttct agtgaccagg ggtcacttac ctgtttttct      540
taatacacc ccaagtcttc tcttgccctc tttttagtag cagaattatt cttgtgttca      600
tcaatatgga ttgagtcaaa aattttcaag atctacctga cttattactt caaggatcca      660
tcatactctg gcttccattt ttttgtattt ctataggcat ggattcaaag gggatatctg      720
actggctcag gctagatcca gatgaactcc tctacattt gtgtgccatc ctgggtccaa      780
cagtggcagc taaggagct cagtcacttg tttgaagttt gccagtcaa ggggctgtgg      840
aaggaagagg aagttaatct gagacaggat tgtgacaggc agaccaataa acatgtctgt      900
ttacaatcta aatattcata aaattccaat ccccaaat ctcccacata tgtatgtct      960
tgtattcccc tgagatagga agggaggcat gtcataacc ccattttaca gatgggaaga      1020
ataaagtgcc aggaatactg gtccctccat tagggctact taatgagcca ctggtgaac      1080
aagaaataaa tccgaattga gagcttagac tgccctgtct cctgttaaca attaaagactg      1140
caaaaatttc aaaccatatt gcatgcacaa taaatactgc atctgaatca attgtagaga      1200
caaagacaga ggcacaggga gaagacagat ctatccaagg tcaactcaagt gaggaaataa      1260
accagcttaa aatagacttc tgtctcagca gcattgtgct ttcactcctg ggcaacttcc      1320
tgcctataca gcaacattaa tgccagcaag gaaggaacct gaggggttaa tccttggtccc      1380
cagccccaga tagcaatata gaacccacc cccgtaattc agtcaataaa tagatgtccc      1440
tttcatacaa gtttcagaaa acacagttaa tatacaacca ctactcaca attaaataag      1500
ttatcttact gtaaaggata taactatttt attatctttg caattaaaat gaaatatgct      1560
aaaggtagaa gcaatacaaa acagctgctg ccagaagttt caataaaaaga tcaactactg      1620
gcacccttat aactgtggga ccattaggag atttaaagt cttcttctact ttgccacgg      1680
tagggagtga ggctgactg agaaacatca ctggcatgag gtctaattgc ctgccctatg      1740
attaatgttg ccaagtgaat tcagaagttg tcacagttct catcctatgg tccagggtca      1800
tttataaaat agagcaaagg gagccagtg ctttgagaat gccaatgcaa aattataata      1860
attacttatt acatgatata gttgttaaag tattttctgt gttgttcaaa aaaaaaaaaa      1920
aaaaactcga

```

<210> 168

<211> 1021

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (248)..(248)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1004)..(1004)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1014)..(1014)

<223> n equals a,t,g, or c

<400> 168

```

ttcggcagag cccttgcgcg ctcttgaata cctgckttct gtagcgctag ttctcttcaa      60

```


gatttgcctta	gtgtcatttc	atttcgggtt	cttttctcgc	catgtttttc	tgctcggaatt	120
acgggttcgtt	ttgggttctat	gtactctcta	aaatgttatc	gtttttcatt	tgctctactaa	180
ttttcgtgca	tttgttacta	ctgagtttct	taatatctga	ctggcctccg	cccacgggct	240
ctgcaganca	taaaatactc	aggetgatgg	tagtgcagag	actctccctc	cttgatcagc	300
gcaaacgttg	gtctgaggct	tgagggatgg	agcaacattt	tcttggtgtg	gtgaagcggg	360
cttgggattc	cgcagaggtg	gcgccagagc	cccagcctcc	acctattgtg	agttcagaag	420
atcgtggggc	gtggcctctt	cctttgtatc	cagtactagg	agagtactca	ctggacagct	480
gtgatttggg	actgctttcc	agcccttgct	ggcggctgcc	cggagtctac	tggcaaacg	540
gactctctcc	tggagtccag	agcaccttgg	aaccaagtac	agcgaagccc	actgagttca	600
gttgggccggg	gacacagaag	cagcaagarg	caccgctaga	akargtgggg	caggcagarg	660
aaccgcagac	actcaggctc	crgcagcttc	ctgggacag	tcctctccat	ccytgggaca	720
gacagcagga	caccgaggct	tgtgacagcg	ggtgcctttt	ggaacgccgc	catcctctg	780
ccctccagcc	gtggcgccac	ctcccggtt	tctcagactg	cctggagtgg	attcttcgcg	840
ttggttttgc	cgcgttctct	gtactctggg	cgtgctgttc	acggatctgt	ggagctaagc	900
agccttagat	agcagcagaa	ggcttttttg	attctctctc	ttgaaaagat	tctcagttac	960
caaacgtctc	cacctagaaa	ataaaaatac	attaagatgt	tganaaaaaa	aaanaaaaaa	1020
a						1021

<210> 169

<211> 727

<212> DNA

<213> Homo sapiens

<400> 169

gctggtatct	ccagtgtttg	ggttttagctc	caacttacag	gttaggacca	gcttttctgc	60
agggtgtgac	cagcaatttc	ctgcggcatt	tacttcttga	taacaagagt	gagaagatag	120
agacagggca	gatagacact	taagagtaaa	atgtattaac	acaaaggctc	tggccgcccc	180
cctacaaagg	aggccatgga	accgatggaa	ctgatggagg	aaatgctggg	actgtgggtc	240
agtgtcgaca	cacccatggc	catacgtttg	gtcttcttgg	ccttggtctg	gctggtggat	300
gggaagccag	tatggatcac	cttgtggatg	gatgcaaaga	gaccaaactt	ggcgggcaact	360
ggaagtacct	ggggaagcag	gagagactca	cactgctgtc	atggccccac	agcctggagc	420
ctccctctgc	tcctctgcct	cttcagagcc	cagcagaaaag	acagagaaaag	aagcctcctt	480
ggggttccat	taccacact	ccaaggtgga	aatctttcag	atgggttagat	gatgaaggta	540
gtagaaggca	aggatgattg	ggagtagaag	gaagagtgc	aggctagcat	gagctgtgca	600
gcagcaagat	tccatagag	caaagtccag	aaagtgrgmm	aaaaggacca	agttggatct	660
cctctaacc	ctgacctgca	tgatatgggt	gtgagaagct	tcaactgaga	aagctgctga	720
gaaagta						727

<210> 170

<211> 1341

<212> DNA

<213> Homo sapiens

<400> 170

cagggaattcg	gcacgagagt	ctgtggctct	ctgtatctca	actttttcat	cttaaaaaaa	60
caaatagggt	tgtgtgtgtg	gctgggtggc	ataaggctct	ttctggctct	aataacctga	120
gcttctgtta	tgaagctggg	acccttagag	cctcaggatg	atcctctgtt	tgtttgtgaa	180
gccccaatca	ggtgctaagc	accatagtg	cacttagctg	aagctcctct	gtaactcctg	240
tgggcccctgc	cttggcccacc	cccgcagact	gctgcagtgc	tcctgagcag	cacaggcctg	300
atggagcttc	tggagaagat	gctggccctc	accttggcaa	aggcagattc	tcccaggact	360
gcactcctct	gctctgctctg	gctgctcact	gcctccttct	ctgccagca	gcacaagggc	420
agtttgcagg	ttcaccagac	actctctgtg	gaaatggacc	aagtattgaa	ggctctcagc	480
tttccaaaga	aaaaggctgc	actactctca	gctgccatct	tatgcttctc	gcggacagcc	540
ctgcgacaaa	gcttttctct	tgccctggta	gccctgggtg	cctcaggggc	ccagccactg	600
ccagccacca	aggacactgt	cctagctcca	ctgcgaatgt	cgcaagtcgg	gtccctgggtc	660
attgggctgc	agaacctctc	ggtgcagaag	gacctcttat	tgtcccaggc	ctgtgttggc	720
tgcttgagg	ccttgcttga	ctacctggat	gcccggagcc	cagacattgc	tctccacgtg	780
gcctcccagc	gttttggatg	gttttggctg	tttaccctct	tggatgctgg	agagaattcc	840
ttcctcagac	ctgagatttt	gaggctcatg	accctgttta	tgcggtagcc	gagtagcagt	900
gtcctctctc	atgaagaggt	gggtgatgtt	ctgcaagggt	tggctttggc	tgacctgtct	960
accctctcga	acaccacact	ccaggccctg	catggcttct	tccagcagct	ccagagcatg	1020

ggacacctgg	ctgaccacag	catggcccag	accctgcagg	cctccttggg	gggccttccc	1080
cctagcacct	cctcaggcca	gccacccctg	caggacatgc	tctgcctggg	aggggtggct	1140
gtatccctgt	cccacatcag	aaactgatcc	tcaggacttg	aaggccca	agtggagaga	1200
gaatgagacc	tggagacaaa	gggcataatt	gttggggaaa	tggatgacag	ctgaagctat	1260
tcatatggag	ccatatactc	tattgttgaa	atagaataag	gaaataaaat	gatacactca	1320
cataaaaaaa	aaaaaaaaaa	a				1341

<210> 171

<211> 839

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)..(1)

<223> n equals a,t,g, or c

<400> 171

ngaaccacaga	agatgctgcc	tctcctgac	atctgtctcc	tgcttgcct	tgaagggaag	60
aactgcctcc	gctgctggcc	agaactgtct	gccttgatag	actatgacct	gcagatcctc	120
tgggtgaccc	cagggccacc	cacagaactt	tctcaaagta	ttcactcctt	gttcctagag	180
gataataatt	ttctcaaacc	ctggtacctt	gatcgtgacc	atttggaaga	agaaacagcc	240
aaattcttca	ctcaagtaca	ccaagccatt	aaaacgttac	gagatgataa	aacagtactt	300
ctggaagaga	tctacacgca	caagaatctc	tttactgaga	ggctgaataa	gatatctgat	360
gggctgaagg	agaaggagc	cccacccctc	tccatgaatg	ccttcccggc	tccatctcct	420
acttgcacc	cagaacccct	tggctctgtc	tgcttcccca	gcacctcagt	ttctctacct	480
tctcaccctc	cctggcagcc	tgcaatgagt	cctgtgcccag	gaaccggcgg	acctccctgt	540
gggctgtgag	tctcagcagt	gctctactcc	tggccatagc	tggagatgtt	tcttttactg	600
gcaaagggaag	aaggaggcag	taaagggaaca	gggcagccc	catgtcttcc	agaagtgaac	660
agaggccgca	gctaccaccg	tcacaaagtt	cactcatctc	tgggtcccgg	tgaccccatc	720
ccccataacc	ctccatcctg	ggtcctgggg	ccccaaagct	ctgaggccta	ggagactgcg	780
ctgtctcgtg	gtttgcctac	tcctacacct	ttgtaaagag	tctcttcatt	aaaaccct	839

<210> 172

<211> 1022

<212> DNA

<213> Homo sapiens

<400> 172

cgctcctgcc	gccgggaccc	tcgacctcct	cagagcagcc	ggctgccgcc	ccgggaagat	60
ggcgaggagg	agccgccacc	gcctcctcct	gctgctgctg	cgctacctgg	tggtcgccct	120
gggctatcat	aaggcctatg	ggttttctgc	cccaaaagac	caacaagtag	tcacagcagt	180
agwgtaccaa	gaggctatct	tagcctgcaa	aaccccaaag	aagactgttt	sctccagatt	240
agagtgggaag	aaactgggtc	ggagtgtctc	ctttgtctac	tatcaacaga	ctcttcaagg	300
tgattttaaa	aatcgagctg	agatgataga	tttcaatatc	cggatcaaaa	atgtgacaag	360
aagtgatgag	gggaaatatc	gttgtgaagt	tagtgcccca	tctgagcaag	gccaaaacct	420
ggaagaggat	acagtcactc	tgggaagtatt	agtggtccca	gcagttccat	catgtgaagt	480
accctcttct	gctctgagtg	gaactgtggt	agagctacga	tgtcaagaca	aagaaggga	540
tccagctcct	gaatacacat	ggtttaagga	tggtatccgt	ttgctagaaa	atcccagact	600
tggctcccaa	agcaccaaca	gctcatacac	aatgaatata	aaaactggaa	ctctgcaatt	660
taatactgtt	tccaaactgg	acactggaga	atattcctgt	gaagcccga	attctgttgg	720
atatcgagg	tgctctggga	aacgaatgca	agtagatgat	ctcaacataa	gtggcatcat	780
agcagccgta	gtagtgtggt	ccttagtgat	ttccgtttgt	ggccttggtg	tatgctatgc	840
tcagaggaaa	ggctactttt	caaaagaaac	ctccttccag	aagagtaatt	cttcatctaa	900
agccacgaca	atgagtgaag	atgatttcaa	gcacacaaaa	tcctttataa	tttaaagact	960
ccactttaga	gatacaccaa	agccaccgtt	gttacacaag	ttattaaact	attataaaac	1020
tc						1022

<210> 173

<211> 1028

<212> DNA

<213> Homo sapiens

<400> 173

gcatgac	gtggaacaca	gtttggg	atagatgtga	attaagacac	caccgagata	60
cggtctgtga	ggttcatacc	gtgctgatag	cactcgtggt	gtctgtgaaa	tgtgggtaag	120
acattcaaac	ctgggttttga	tactggaaac	tcttccttta	aaactgtgac	catgatttca	180
ttcagccct	ccacacccct	atgtctgcct	tggttcagag	tgagttttct	atggagcctg	240
tggtccctttt	gcagcccacc	tggtggcttc	ttaatgtaac	tcttccctg	gtcgctgga	300
gtggaccact	catctgcagg	cctctcctgc	atggggaggg	taggcaggga	gcagcatgtc	360
tgcaggggtg	aacctttgtc	cttctgtcag	gcgaggccca	ggctgcacca	gccacctgcc	420
acaatgcatgc	agtgccacgg	gccctgcgta	tggccctgc	aaccgtgctc	tggcgggcac	480
acctggctgc	tgaggcccaa	ggcggctgtt	cagtgaagag	tcccatgttt	agtatggact	540
aaagtcccat	gttttagccay	tgccccagtc	tcccgtagcc	ccagaaacca	ggtcactgga	600
ccacagtgcc	agatcctcat	cacgccgggtg	agcacctaga	agtgagaaca	ctgtattcct	660
acaatgtaca	cttggtatatt	tctccttatt	tagtttctag	tgaaacaaat	caagtaagga	720
actatcttta	gttttagatgg	aattatattgt	ttttaattgt	tgccgtattc	atctatatag	780
ctaataatttc	aagataagta	atgaacaaaa	cctgtctaaa	ccttttggtt	ccaatgaatg	840
aaagtcatgc	actttattta	taggctctat	gttttggtt	ctgcagtact	tttattatct	900
atacataatt	tggtccaaaa	taagaaattg	gaaagaatga	aatgtttagt	ttatagtaga	960
agaaagatga	tgacactaag	ttgtgaaaat	atgttgtgat	ttttatgaaa	taaactcacg	1020
gcacgtag						1028

<210> 174

<211> 808

<212> DNA

<213> Homo sapiens

<400> 174

tgcaggaatt	cggcacgaga	ttacaacaca	tcagaacaaa	atgttatgga	ctaccatgga	60
gcagaaatcg	tgagccttcg	tttctgtcga	ctagtaaaag	aagaatttct	ttttctcagc	120
cccaacctga	attcacatgg	actgaaatgt	gcactctctc	ctcatgggct	ggttatgggt	180
ggagtgtctg	ggactgtcca	tcgaggaaac	acttggttgg	gcatttttga	acaaattttt	240
ggactcatcc	gctgcccttt	tgtggagaat	acttggaata	tcaaatttat	caacctgaaa	300
attatgggag	agagtccct	tgctcctgga	acattaccga	aacctctgt	taaatttgaa	360
caaagtgatc	tagaggcctt	ttataatgta	atcactgtat	gtggtaccaa	tgaagtacga	420
cataatgtaa	agcaggcttc	ggatagtgga	actggggacc	aagtttgagg	tagtggaat	480
gagacattgc	tgaacaaaag	agaactgggt	ttacctgacc	ctctaaagcg	ctaagtactg	540
tcagcctgaa	aaaaatcttc	tatacagaaa	ctcttccaaa	tactatatca	gtaatgtctg	600
aatgatttca	gatgtgaaaa	ttgacatatt	ttagttgaaa	tacctttctg	gactacagac	660
ttacatatca	tgtgaatact	tacctatttc	tacccgagtt	gcagcaagta	ttctgaaagc	720
ttaatgcaaa	taaatcccac	tttagatcct	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	780
aaaaaaaaaa	aaaaaaaaaa	aaaaaac				808

<210> 175

<211> 1898

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1398)..(1398)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1428)..(1428)

<223> n equals a,t,g, or c

<400> 175

ggcacgaggt	ctccatggcg	ttagaagtct	tgatgctcct	cgctgtcttg	atttgaccg	60
gtgctgagaa	cctccatgtg	aaaataagtt	gctctctgga	ctggttgatg	gtctcagtta	120

tcccagttgc	agaaagcaga	aatctgtata	tatttgcgga	tgaattacat	ctgggaatgg	180
gctgccctgc	aaatcggata	catacatatg	tatatgagtt	tatatactt	gttcgtgatt	240
gtggcatcag	gacaagggtg	gtttctgagg	aaactctcct	ttttcaaacc	gagctgtact	300
ttaccccaag	gaatatagat	catgaccctc	aggaaatcca	tttggagtgt	tccacctcta	360
ggaaatcagt	gtggcttaca	ccagtttcta	ctgagaatga	aataaaattg	gacccatgct	420
cttttattgc	tgacttttcag	acaacagcag	aagagttagg	attattatct	tctagtccaa	480
acttgctctg	agctaaagga	gaaatggaaa	cttgaagctg	gtgttatgta	ttttgcagga	540
aaacagtttc	attttttcat	agcaaaaata	tagttgggtg	atatctctcc	ttaagtctct	600
ggtttcctaa	aaccctactt	cagtaaaggt	cctgattagt	tgattagtga	atgtgtattt	660
ctaaatatat	gtattcagta	ggggtatggc	tgattaattt	aacattaact	attaggtaat	720
tcatattata	catttaagtt	ctttctgttc	tgtgtagaag	attcagaaat	atgtcttcaa	780
agacaatgac	ttgatcctaa	tgataagaac	ctccaataaa	tatgttctaa	tatttttcag	840
gaagaataaa	gaatagagag	agacatataa	atgtgcaaga	ggcaaaactt	tgagcatagt	900
gtaaaattta	acatatatta	tctcacgaaa	ggcaaaatcc	ttttatgtgc	agatacttta	960
attcatgtag	attttcttat	taatcagtaa	agttgaatcc	taacaataat	gccatgtgac	1020
aacctattta	gattattcca	gaattaaatt	caattttatt	tctagagctc	aagtaaccac	1080
tactttaact	gaaatttgat	gttaggtttc	ccttgttcct	ccgaatgggt	cttccacact	1140
caaaataatt	gaatgggtga	gttgggttaag	caaagagtta	tcctgccacc	taagagcatt	1200
cattaaatga	ttatttatta	ccacctactt	tatactatct	tcctttcttt	aaacatggag	1260
tctaaatatg	taatatatca	aaaaataact	ctgatttggg	agatttctta	tatcaagggt	1320
gagaattgaa	ctgtgccatt	ggctattcaa	tagcttattg	aatgtatggt	ttggatgcca	1380
catcctcctg	gaagcaantt	ttgccaagat	actgtttatt	attatttnta	attaaagtga	1440
tactattcca	ttttcaatta	aatgctgtct	gtagctgtta	acttgtcaga	taaagaattt	1500
gaccctgtca	tagtgaacat	ctgtctttac	cagttaacat	gcagctaaga	ggtaataact	1560
ctatgggact	tcctaagggt	cagaatatgg	tacaagtaca	ttgcgataaa	ttatttaatc	1620
ttcttaaaga	gtgaaatata	tcatgattat	cccaatttta	cagataagca	aacagaggtt	1680
aaatcatttg	ctgagtcac	ataacttggt	gggtgtgggt	caagatttaa	aatagggcaa	1740
tctgccttta	gatctgtctc	tatactctct	ctttgtatat	tagccactat	actctactgc	1800
ttggaatcat	cttaagttgc	tgaactttag	ttctctagaa	aacaattgct	attcaagcag	1860
ttatacaact	ctcaataaaa	cttaagttg	aaaaaaaa			1898

<210> 176

<211> 818

<212> DNA

<213> Homo sapiens

<400> 176

aaaacttgag	tatgttgagg	gaaggaatat	atatatatct	gggagagaat	ggatacgttt	60
tgtttttctg	aaatggaatt	agaaagatgt	tcagttgtct	tgtgcattct	tgcaaacctt	120
gcagtttttg	gagccctggt	tctgccttgt	atcattttcc	actgtgtatc	kgattctagg	180
agcgtgaaca	gggagacaaa	ggtgaagttt	gtgcacacct	ctgtccatgg	ggtgggtcat	240
agctttgtgc	agtcmgcttt	caaggctttt	gmccttggtc	cycctgaggc	tgttcctgaa	300
cagaaagatc	cggatcctga	gtttccaaca	gtgaaatacc	cgaatcccga	agaggggaaa	360
ggtgtcttgg	taacctaat	tttttttaaa	ttatgaaatc	tgctttttata	ttcaaaaacta	420
ttactgtcaa	gtaaaatata	tttttatgtg	ttttcattgt	gctgaagaaa	aactaatttc	480
agcatggaaa	tatgtatggt	tggctgggtg	cagcgtctca	tgtctgtaat	cccagcactt	540
tgggagacca	aggcaggcag	atcacttgag	gtcagggtgt	cgagaacagc	ctggccaaca	600
tggcaaaacc	ctgtctctac	taaaaatata	aaaattagct	gggtgtgggtg	gtacatgcct	660
gtaatcccag	ccacttggga	ggctgaggca	ctagaattgt	ttgaacctga	gagatggagg	720
ttgcagttag	ctgagattgc	accactgcac	tccagcctgg	gtgacagggt	gacagagcga	780
gactctgtct	caaaaaaaaa	aaaaaaaaaa	aactcgag			818

<210> 177

<211> 3435

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (760)..(760)

<223> n equals a,t,g, or c

<400> 177

cgagcagcat	cagaaagtac	gawtctgctc	tgagggcgra	tgraaaatga	agawtctgac	60
gtaaagcctc	cagactkgcc	aaacccaatg	aatgctacct	cccagtttcc	tcagcctcag	120
cacttttcag	ctttggcctc	cgtctgcctc	gggatatcac	agagctgccc	gagtgragta	180
ggggtacccc	ttctacatgg	ccatgggctt	cccaggggat	gacctctcgg	ctgatgacat	240
agctgggaag	tttcagttca	gccggggcat	gcgcgcag	tacgacgcag	ggttcaagct	300
gatggtagt	gaatatgctg	agagtaccaa	caactgccag	gctgccaaag	agtttggagt	360
attggaaaaa	aacgttccag	actggcgcaa	agtgaagcca	cagcttcaaa	acgcccacgc	420
catgcggcgg	gcattccgag	gccccaaakaa	tgggaggttt	gctctggtgg	accagcgtgt	480
ggccgaatat	gtcagataca	tgcaggccaa	aggggacccc	atcacccggg	aggcgatgca	540
gctgaaagct	ctcgaaatcg	cccaggaaat	gaacattcca	gagaaagggt	tcaaggcaag	600
cttgggttgg	tgtcgagaag	tgatgacctg	tctctgaggc	ataaagtgcc		660
cgtgccccag	cacctgccgg	aagacctgac	tgagaaactc	gtcacttacc	agcgagtggt	720
cctggctctg	cgcaggggcg	atgactatga	ggtagctcan	atgggggaatg	cagatgagac	780
gcccatttgt	ttagaggtgc	catcacgggt	aactgttgat	aaccagggcg	aaaagcctgt	840
cttgggtcaag	acaccaggca	gggaaaaaact	gaaaatcaca	gcaatgcttg	gtgtcttggc	900
tgatggragg	aagttaccac	cgtacatcat	tttragggga	acatatatcc	ccccggggaa	960
gtttcccagt	gggatggaaa	ttcgctgcc	ccggtatggg	tggatgactg	aagacttgat	1020
gcaggactgg	ttggaagtgg	tgtggagacg	gaggacagga	gcagtgccca	agcagcgagg	1080
gatgctgac	ttgaatggct	tccggggcca	tgccacagat	tccgtgaaga	actccatgga	1140
aagcatgaac	actgacatgg	tgatcatscc	agggggctctg	acctcacagc	ttcaggtgct	1200
ggatgtcgtg	gtctacaagc	cactgaatga	cagtgtgcgg	gccagtgact	ccaactggct	1260
tctggctggg	aacctggcgc	tgagcccaac	cggggaatgct	aagaagccac	ccctgggcct	1320
ctttctggag	tgggtcatgg	tcgctggaa	tagcatctca	agtgaagcca	tcgtccaagg	1380
gttcaagaag	tgccatatct	ccagcaactt	ggaggaggaa	gacgatgtcc	tgtgggaaat	1440
cagaggtgag	ttgccaggag	gaggagaacc	accaaaagat	tgtgacaccg	aaagcatggc	1500
tgagagcaac	tgaagggaaa	gggaaagcaa	atggaaactct	gatttaaaca	gctggggatg	1560
aaattcctca	agatgattat	tcttgaaagt	gtggatgcgc	tggatgcgca	gggaacatca	1620
ggaaaaggcc	acggggctct	gaacagcccc	ggtccagaca	gcagcctgta	catccatccc	1680
aggacacagc	ccagccccctc	cccacacccat	acaaggatct	agaaaagtct	aggacctatc	1740
atttcatcag	agacatgac	agaaaagaaa	ctgcttctgc	cccatttctt	gttttggaga	1800
ttactccatc	tgtccatcaa	aagaaacctg	taaatatgaa	agaacaaagg	ttatttctctg	1860
gagaaaagac	aattttattca	acaccaacaa	gggactcatc	atatggggcac	aactctgggtg	1920
tccttctatg	gagaaaacct	caagtaaagt	tttattctgc	ctttgaaaat	gcttccaaaa	1980
gtagaccctg	tccccacaca	ggtcaagact	acagagaagg	ctttgtagaa	atgtgtcacc	2040
tatgtacacc	tgctacttac	acatttcctc	ttttggaaaa	atgagatact	tagaataaca	2100
agaaaattaa	gacatactgg	cctggtgcc	gcagatggct	tttctataga	caaactaggt	2160
tagtgtggaa	gatataggtt	aaaataaact	atgctgtttt	atttatcttc	ccaactgat	2220
tggcagctag	acttttttag	ggtctcattt	aatggccctg	tttttttcat	tatttatattt	2280
aatgataggg	caggatttctg	tatgcaagct	cttgtttctc	aggctgcctg	cagaagaagt	2340
cgctataaat	tatctgttgt	ctacatggta	caaggcccat	tgactcatct	gatgcttgtt	2400
ttgttaattt	ctttaatatt	tttatcacgg	ggcagtgagg	gggcttgggc	ttttagccac	2460
agctgtttta	agacttctga	tctcctgccc	tgcagggaata	ggtgggaagt	cattgaattt	2520
ttacactata	gtaatttgca	ttcccacata	agttttgagt	ttacgaaaac	attcctttta	2580
agggatctgt	gctacacaaa	atatgccagg	acctcacaga	caaagccatt	gctagaaatg	2640
tcattccaat	gatcagatct	ggaaacaggc	tgcataaacc	acttttctct	cttgtagact	2700
cagctcacct	gtatatttta	actgttcttg	gcactctgaa	acacctatct	ctactcaggt	2760
actcattgtc	ctgttactga	ttcacctttc	tgtacctttt	caaccagttt	tcccccaagg	2820
ggggaaaattt	tacttaacct	ctagtatttg	aacaactcaa	tatttgaatt	gttgccccat	2880
ttgcttttac	ctgtactgta	ttcttggtea	tctcaaatgg	cgtctaaacc	cagctacttt	2940
gcattccaga	agtttccatt	ccctccaatt	tttcatctgt	cctagtact		3000
ggctctttct	tcattgtctta	tttctcttgc	tttgggagct	taaaagattt	tacaagacct	3060
aattttgggt	tccttccctg	gagccatagt	taccctgcc	agaagagtag	aaaatgggtt	3120
caactcctgt	ttcgctccac	caacacctct	gtgagtctca	tcacagctg	agcgatgatg	3180
ccttacagg	tgcatagcac	tggaaactttc	ctagagtaac	ggctctgctg	ccagggtttc	3240
tctgggctca	ttcttccact	gacttaatta	tgatctatgc	ctaacagagc	cccagtacaa	3300
ctatttttga	gaatggctgt	taccctagaa	ttactatagc	acatattgag	atatagttgt	3360
actccctagt	agataggaa	tgaccccaac	aataaacttt	gataataaag	amaaaaaaaa	3420
aaaaaaaaaa	aaaaa					3435

<210> 178
 <211> 1481
 <212> DNA
 <213> Homo sapiens

<400> 178
 ggcacgagcc tggcagagag actctgaaat gagggattag aggtgttcaa ggagcaagag 60
 cttcagcctg aagacaaggg agcagtcctt gaagacgctt ctactgagag gtctgccatg 120
 gcctctcttg gcctccaact tgtgggctac atcctaggcc ttctggggct tttgggcaca 180
 ctggttgcca tgcgtctccc cagctggaaa acaagttctt atgtcgggtc cagcattgtg 240
 acagcagttg gcttctccaa gggcctcttg atggaatgtg ccacacacag cacaggcatc 300
 acccagtggt acatctatag cacccttctg ggcttgcccg ctgacatcca ggctgcccag 360
 gccatgatgg tgacatccag tgcaatctcc tccctggcct gcattatctc tgtgggtggc 420
 atgagatgca cagtcttctg ccaggaatcc cgagccaaag acagagtggc ggtagcaggt 480
 ggagtctttt tcatccttgg aggctcctg ggattcattc ctgttgccctg gaatcttcat 540
 gggatcctac gggacttcta ctaccactg gtgcctgaca gcatgaaatt tgagattgga 600
 gaggtctttt acttgggcat tatttcttcc ctgttctccc tgatagctgg aatcatcctc 660
 tgcttttctt gctcatccca gagaaatcgc tccaactact acgatgccta ccaagcccaa 720
 cctcttgcca caaggagctc tccaaggcct ggtcaacctc ccaaagtcaa gagtgaattc 780
 aattcctaca gcctgacagg gtatgtgtga agaaccaggg gccagagctg ggggggtggc 840
 ggggtctgtg aaaacagtgg acagcaccct gagggccaca ggtgagggac actaccactg 900
 gatcgtgtca gaagggtctg ctgaggatag actgactttg gccattggat tgagcaaagg 960
 cagaaatggg ggctagtgtg acagcatgca ggttgaattg ccaaggatgc tcgccatgcc 1020
 agcctttctg ttttctctac ctgtctgtc ccttgcccta agtccccaac cctcaacttg 1080
 aaacccctac cccttaagcc aggaactcaga ggatcccttt gccctctggt ttacctggga 1140
 ctccatcccc aaaccacta atcacatccc actgactgac cctctgtgat caaagacctt 1200
 ctctctgggt gaggttggct cttagctcat tgcctgggat gggaaggaga agcagtggct 1260
 tttgtgggca ttgctctaac ctacttctca agcttccctc caaagaaact gattggccct 1320
 ggaacctcca tccactctt gttatgactc cacagtgtcc agactaattt gtgcatgaac 1380
 tgaataaaaa ccattctacg gtatccaggg aacagaaagc aggatgcagg atgggaggac 1440
 aggaaggcag cctgggacat ttaaaaaaaa aaaaaaaaaa a 1481

<210> 179
 <211> 652
 <212> DNA
 <213> Homo sapiens

<400> 179
 gaattcggca .cgagcaacag tggggcactc tgctcccagg caggtcccac tgggctgagc 60
 cgcacagcct ggctttgggc ttccctgact gcaccaccca catcasctgc ctctagccct 120
 taamatacaa aacttcccc agtactggc cgccaggctg agttggggga tgtgttacat 180
 ccctgggtcc actggggggc agtgttggcc atgggtgttg tgctggctct gccgagaggc 240
 gttggagtgg ctgtgtgggg cggtgagcgc cggcccagcc tgatggaacc cactgtacca 300
 ggcccaggcc tcagcctctg agaaggactt cctgtgtca ctactcata catgtcctca 360
 ggacgtgaag acatttcagc agaccaaagt ttcttctgaa ttctcttctga atcgtccaga 420
 tacttgaga catctcctcc tcacctgtgg ggtgtgggg cagtoctagg cgtgggggca 480
 gatgggtgga cagctgtgc tgccctgtg ggggtgggca gcccttgag cacacagtgg 540
 tgaagacatt cctgaatatg tctcaggctg tagaaatctt attttgtgga aagattttag 600
 agaatcatca aaataaactt ttaccaaata aaaaaaaaaa aaaaaaactc ga 652

<210> 180
 <211> 1711
 <212> DNA
 <213> Homo sapiens

<400> 180
 ggcacgagcg ctctgtcct gccactgagg gacccgggta ccaacctca tgtagctcag 60
 tttgcccatc tgtcccgggt ctaacacaca gttctcggga gactttcccc attcccagag 120
 gagtagtgcg aaatgcgtgt acctctagtc ttaaagctgg cgtttgtatt agttgggttt 180
 tctgggtgtc atttagcaag tgaaagtttc tggttccctc cttcactgtg tgacctgact 240
 agtctcctcg gattgcattt atggaagttt atacgagacc tagtttccat ggaggaactc 300

actgattccg	cgagggagat	ggggactctg	atgatggctc	tcagccttaa	ggctatgttt	360
ccagtgtcct	ctgggtgttt	ccaagagcgg	caagaaacga	ataaatctct	gacctttctc	420
agggtcagcc	agagagacac	tagccactg	atggacggac	agacgtgggc	aaggggtccgt	480
gtcactaaac	caccacaccac	tgccacagct	gcctacaaca	gacacatcag	atgacactcc	540
gggcaataa	atgattttca	ctgaggactt	actgggttta	ataataggtc	ctgggtgtaga	600
gaagtccctc	aacctattgt	gcaacgagtt	ttgagaagcg	ggtaagctgt	atgttttggtg	660
gttttgtttc	ataaattcat	ctacaggaag	accaatattg	actgaatgaa	gctttcattt	720
aaagagctaa	aatatgcttt	gtgtttttat	atgtggatac	tacttttaac	ctaacgacta	780
ttcattgtat	catagcttgt	gatgtattct	gctcatggct	tttaaggtaa	attgtgccat	840
gatccactgc	cattctaatt	gctttaacaa	gtcattacca	cactactggt	acatcttaat	900
tatgcataca	gacaggtaga	cttgtttttac	atatgtgaac	taactagttg	tcaaaagcaa	960
tgcagattgt	attctgcaag	taaagtcttt	ttctctctga	aatttctagg	gatgttcttt	1020
aagtcaaat	aactataaaa	ctgaagattt	ttgtacaag	aactgagtg	agattaagtc	1080
tttgtgattc	aacatagtca	agatacaact	gtggatattt	catggaagta	tgcaataaaa	1140
tgtctctacc	tggaaaaatc	tatcaagcag	cgtcacagta	ctgaatttga	aaccagaaat	1200
actgggtttt	tatatataatg	cttcatagat	ttgttttatg	ataaagggca	cataactctc	1260
ctaaacctca	caccacctct	tgaataggta	taataagtcc	acatcaatgc	tgatgcctta	1320
gctattatta	aactcttaca	gtatgatgta	aagtgaaggt	acaatgtaag	atcattccta	1380
ggccaacttt	gaccagtttt	atacagaaac	atgtgccaac	ttttctgttt	gcaaggataa	1440
tatcaaaagca	aacaccagaa	agttatatct	ttgatgcatt	ttttcaaaat	catacacata	1500
atacacaaac	caaagacaaa	tgatgaatat	tacgtcagaa	aatataaagt	cttccccctt	1560
cttcttttgc	caagaaagtc	caatattttc	accattttta	tgcacacaa	caactttatt	1620
taagctggaa	gttaatgtct	cattgttttc	attgttctaa	ataaacacct	tttcccttga	1680
gtattgtctc	aaaaaaaaa	aaaaaaaaa	a			1711

<210> 181

<211> 2058

<212> DNA

<213> Homo sapiens

<400> 181

ggcacgagct	caaagagtaa	gaatccaagt	gtgtgacatt	acatagcttt	gcattctatgg	60
aaacctaaat	cataattgtt	tccactgccc	aattatgttc	cttttcataa	catttactat	120
tctggctata	tttatcatag	aacctaggaa	ccttagagtt	gacctgaatc	taattaaatt	180
tcagacctcc	tggccaaaga	ccctagtggg	agagcaaaac	taaatcaaca	tattaccaat	240
ctcaagtatt	tctctgagga	cccagaccac	tgactttttg	ttgtcatttt	caggttgatc	300
ctataactgt	atgtttctaca	atatctgtgc	tccaccagct	cagtgaggaa	tcaacggaat	360
atcaaaagta	aatattgggtc	accatatacc	ttttgggtact	agtctacgaa	ataattggct	420
gaggaactgt	ttcatattaa	agaaaagcta	aaagcaatgt	gtgatcttag	attagacct	480
tgattggaat	gtatgtatat	tttatataca	aaatattgag	gaaattgaca	aaattttaa	540
acagaatatg	gattagataa	taggaatgta	tcaaggtcaa	tatttataaa	gataatttca	600
actttttatt	tattcagtg	gtacatgtgc	agactttgtt	ttacatagta	cccaacagtt	660
tttcaacgct	tatccccac	cctctagtaa	tctgcagtg	ctattattgt	catcttcgtg	720
gctattgtac	atgggattcc	atacttgatt	ttgtctctca	catgaacatt	attggtgtag	780
agaaatgcca	ctaagttttg	tacgttgctt	ttgtatcctg	aaactttgct	aaagtatttt	840
atcattttcca	ggagcctttc	gttggagtct	tttgggtttt	ctagttagag	agtcacag	900
gaagagagat	aatttgactt	cttcttttcc	tttttgggtg	ccttttactt	ctttctcttc	960
cctgattgct	ctggctaggg	tttctaacc	caaatttttt	gatgttgatc	attatactgt	1020
agttatgcag	gggaatgtct	ttgttctttc	taaagaacat	tcaatgttaa	acattgaaat	1080
gtttaacaat	gaaagatcat	tatatgtaat	ttactctcaa	atgggtcaagg	gagaggagag	1140
agaaagagac	agagagaaag	aataagaaaa	gagagtga	aaatggggca	aaatgcaaac	1200
aatttgtcaa	ctatgtataa	atgtttacaa	gagttctgtg	ttacattttt	gcaactcttc	1260
tgtatgttta	aaataatgtt	aaaataacaa	ttttcccaaa	tgtcaaatgt	tgccacatac	1320
aagcatttat	gagcatggaa	aatgtggctt	ctgaatgata	ggatacaaaa	tctgggtgatg	1380
agcgaatata	ctgaatatata	caagattgag	ttgccatctt	agaaggagaa	tattagctat	1440
aatcacatg	atgaatacat	caatattaaa	tagactagaa	aaccaataat	tataagggtca	1500
caagagtgc	ataaacatga	attatctcca	ttgcattgat	tttcatctct	acttgccagt	1560
tttatgagat	tcagtcacca	atataatttc	aataatttca	acatagaaga	ttcacttcta	1620
gtatgttttc	aaattgtttc	aaacctgac	catctttttg	attgtctctac	cttccaaaag	1680
aaaagaagg	aacactaatt	ttctttctctg	atttacttca	ttgttttctt	ctgttagatt	1740
aactttacct	ataaaagatt	gtctcttgac	tttatatata	tatatatgtg	tgtgtgtgtg	1800

tgtgtgtgtg	tgtgtgtgtg	tgtgtgtgtg	tatttgaaga	ggacatgtgc	ctccataaaa	1860
ggaaataaaa	tgagagaata	cattattgat	tttgtgaaat	caaaatatit	gaattatggg	1920
ttctcaatat	tcaaaaactc	ttgcagtttc	tgtacttatt	tcttctgatg	catagagttt	1980
cggggactac	atatgtttca	caaccaaaga	tatccacttg	aaataaaaac	attataaagt	2040
taaaaaaaaa	aaaaaaaaa					2058

<210> 182

<211> 2398

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1874)..(1874)

<223> n equals a,t,g, or c

<400> 182

attgcttagt	ttgatgtgtc	ttgctttaaa	tccatttatt	tcaacaagct	taaagagatt	60
tttttttaac	ggagatgatt	taattttaac	aatctgtgat	tttctctgaa	tcgaacttgt	120
gttttggcac	ctttcaatct	gtggtaacaa	atgacaagaa	gggtgcaatt	cttccttccc	180
ttgtgcaggg	attttgcctc	cccctttctc	ccagatgaaa	gatatttggg	tctctagaat	240
aactgtggta	cagttagctc	cagagtgttt	tctttctgga	ggcagtttag	acaacagcct	300
caagtagtgc	ttttgttaaa	aatatacatg	tttttaaaag	tgcttgtatt	tctaataatc	360
ttttctcctt	tctcttctag	tctgttctct	ggggaggcag	taaggggccc	tggagctggc	420
ctcggcctcg	gcacgcggag	aggtctggact	tcctgtctct	ctgtgctgaa	tggctgcgat	480
ggcgcccgct	ctcactgacg	cagcagctga	agcacaccat	atccggttca	aactggctcc	540
cccatcctct	accttgtccc	ctgggcagtg	ccgaaaataa	cggcaacgcc	aacatcctta	600
ttgctgccaa	cggaaaccaa	agaaaagcca	ttgctgcaga	ggatcccagc	ctagatttcc	660
gaaataatcc	taccaaggaa	gacttgggaa	agctgcaacc	actggtggca	tcttatctct	720
gctctgatgt	aacatctgtt	ccctcaaagg	agtctttgaa	gttgcaaggg	gtcttcagca	780
agcagacagt	ccttaaatct	catcctctct	tatctcagtc	ctatgaactc	cgagctgagc	840
tgttggggag	acagccagtt	ttggagtttt	cyttagaana	tcttagaacc	atgaatacga	900
gtggctcagac	agctctgcca	caagcacctg	taaatgggtt	ggctaagaaa	ttgactaaaa	960
gttcaacaca	ttctgatcat	gacaattcca	cttccctcaa	tgggggaaaa	cgggctctca	1020
cttcatctgc	tcttcatggg	ggtgaaatgg	gaggatctga	atctggggac	ttgaaggggg	1080
gtatgmccaa	ttgactctct	ccacatagaa	gccttgatgt	agaacacaca	attttgtata	1140
gcaataatag	cactgcaaac	aaatcytctg	tcaattccat	ggaacagccg	gcacttcaag	1200
gaagcagtag	attatcacct	ggtacagact	ccagctctaa	cttggggggg	gtcaaattgg	1260
agggtaaaaa	gtctcccctg	tcttccattc	ttttcagtcg	tttagattct	gacacaagga	1320
taacagcttt	actgcggcga	caggctgaca	ytgagagccg	tgcccgcaga	ttacaaaagc	1380
gcttacagggt	tgtgcaagcc	aagcagggtg	agaggcatat	acaacatcag	ctgggtggat	1440
ttttggagaa	gactttgagc	aaactgccaa	acttgggaatc	sttgagacca	cggagccagt	1500
tgatgctgac	tcgaaaggct	gaagctgcct	tgagaaaagc	tgccagtgag	accaccactt	1560
cagagggact	tagcaacttt	ctgaaaagca	attcaatttc	agaagaattg	gagagattta	1620
cagctagtgg	catagccaac	ttgaggtgca	gtgaacaggc	atltgattca	gatgtcactg	1680
acagtagttc	aggaggggag	tctgatattg	aagaggaaga	actgaccaga	gctgatcccg	1740
agcagcgtca	tgtaccctcg	tgagtagacc	tcattgcata	tagcattctt	gagaaatggt	1800
ggcacaagga	agaatgaatg	aatcgccatt	atggagagaa	tgtgttsttt	gtacataggt	1860
gtytagttcy	gttngttttt	tccctgatgt	tgggtagatg	agtgcataata	catgctagtg	1920
aagaaggggg	agatactttg	ctgtagggtt	gtattgttgt	agtctaaatg	gtggtaattt	1980
ccttttgaag	tctaagaaaa	ataactagga	gacatcttat	gtgtaaaatt	gtactagtac	2040
ctctttaaga	gtgaatttag	atltcttttg	aaactatata	taggacatga	taagttaatg	2100
gcctgattgt	tggaattttg	ttgtttccag	taagcagga	caaatgctga	gttgacctag	2160
ttacctttgt	aggaaattac	agttgctttt	gattgaactt	tcagcagaga	gcacaccag	2220
tcttcaattt	taacacttga	gattttctta	cattttaagg	actgacaatt	agaaaatgct	2280
tcagaatatt	taatacatcg	cctccaagca	cagtctagtt	tcacaacctg	actctcttcc	2340
tattaaaaaa	aaaaaaaaaa	aactcgrggg	ggggcccgtg	cccaatcgcc	cctcatga	2398

<210> 183

<211> 1505

<212> DNA

<213> Homo sapiens

<400> 183

gcaccatggc	cacgcccctg	gaggatgttg	gcaagcaggt	gggtaggtct	tgtctgcttc	60
ctgtggccct	gatgggtccc	tgcagagcct	cacgctgctt	gtcgtcctt	gtcctcttcc	120
ctccaggtgt	ggcggggcgc	cctgctcctg	gcagactaca	tcctgttccg	acaggacctc	180
ttccgaggat	gtacagcgct	ggagctcggg	gccggcacgg	ggctcactag	catcatcgca	240
gccaccatgg	cacggaccgt	ttattgtaca	ggtaatgagg	tgacatctca	ggctgcaggg	300
aagtagtcac	cttcacaaag	catgcactga	ctgtataaaa	aaagaggcag	aggcaatgga	360
aattggatgt	tagctgctgt	tgattttgcc	atcctgggtc	cctggccctc	tccactctcc	420
atTTTTtctc	agtgcacatca	aaatgaccca	gcaatacgca	ctcagcagca	gcagcgtcac	480
ccagtggcta	taaggccatt	gagcttcagg	aggtgcctag	cgccctgct	ggtacctctc	540
tcccactctc	tgagaaagag	caaatatctc	caaaaacagg	aggaatatac	ccttttagaa	600
gcctttgaaa	gcaagtttat	tatTTTTttc	ctgggtatag	aagccttgcc	cattctttgt	660
aggaggtttt	taaaaacagta	cataaaaatt	actcataatt	ttacaatccc	tagattgaat	720
caacaatatg	caacttatgg	gtcacctccc	gtgtgccact	catttctaga	tgtaggaggc	780
cctgcggtga	atggagctga	ctaggcactg	ccctcagggc	gcttacgttg	taagaatctc	840
ctccaaatga	tagctgaaat	caagctgcag	cagcactgta	ttctgctgaa	aatgttgaaa	900
aacattttta	agagcatttt	ctTTTTtaaa	tatgtatata	tttagggggt	acaagtgcgg	960
gtttctgatg	tgagctgata	ttgcagtgat	gacatccgtc	tgggctttta	gtggaccttc	1020
cactcaaata	gtgracattg	tacccaatag	ggaagcttta	atccccacc	cctyccaccg	1080
tgtcacctty	tggaatcccc	agtgtctgtg	tttccactca	gtatgtccat	gtttacccat	1140
tgttttagctc	ccactcataa	gtgagaacat	tttaagagca	ttttctcatg	ccattaaaaa	1200
attattatat	aggccagggtg	cgttggtgta	catctgtaat	cccagccctt	tgggaggctg	1260
aggcaggcag	atcacctgag	gtcaggaggt	tgagaacagc	caggccaaca	tggtgaaacc	1320
ctgtctgtac	taaaaatata	agaattaacc	agatgtggta	gcggcgggca	cctgtaattc	1380
cagctacttg	gcaggcttga	acctgggagg	cagaggttgc	agtgagctga	gattgcacca	1440
ctgcactcca	gtctgggcca	cagagtgaga	ctctgtctca	aaaaaaaaaa	aaaaaaaaac	1500
tcgag						1505

<210> 184

<211> 868

<212> DNA

<213> Homo sapiens

<400> 184

gactgactat	agggaaagct	ggtacgcctg	caggtaaccg	tccggaattc	cgggtcgacc	60
cacgcgtccg	ctgaatttag	gagacttttt	accagggggc	aaaaggctct	tagggtaatg	120
agatggatgg	tggcccagg	gcattttcca	gggcctgggt	tctccagatc	ccgtggcttc	180
tgttgagtgg	aggcaacttt	gctctgtgtg	aacctcgccc	ctgtccctct	gccgggcacc	240
cctggcagga	agcaggactc	ccatcctcac	cctgacttag	actgtcctct	gagtcagctc	300
ctctccaaga	caggagtggg	cagccctggg	cagtcttctg	gccccttgct	aaagtgaggg	360
scaggaagct	ggggctgccc	tccagaaagc	cgggtaggr	actctgaaaa	atacctcctc	420
taaacggaag	caggytctc	cagttccact	tggcgcccc	tcccacaagg	cccttccctc	480
ctgaggaccc	caccccccta	ccccctcccc	agcagccttt	ggaccctcac	ctctctccgg	540
tgtccgtggg	tcctcagccc	aggtgagct	gcagtcaggg	gggatgggac	gggcaggcca	600
gaggtcagcc	agctcctagc	agagaagagc	cagccagacc	ccaaccctgt	ctcttgtcca	660
tgccctttgt	gatttcagtc	ttggtagact	tgtatttgga	gttttgtgct	tcaaagtttt	720
tgtttttgtt	tgttttggtt	ttgttttgag	ggggtggggg	gggatacaga	gcagctgatc	780
aatttgtatt	tatttatttt	aacattttac	taaaataaagc	caaataaagc	ctcaaaaaaa	840
aaaaaaaaaa	aaaaaaaaag	gcggccgc				868

<210> 185

<211> 1502

<212> DNA

<213> Homo sapiens

<400> 185

gctgattacc	tttatgttgg	tttctcttat	tatttgtctc	ttgctagatc	tgctaaacca	60
accagcttg	ctcagagatc	tcataattgaa	gcaacatata	ggcaatccac	atctttcttt	120
ccctttgaag	tatagtcatt	ggatgggatg	agggacaggg	cctgttgggt	tcacagggcc	180

ttgcaactgca	tgggcacata	cttaaaagct	cttgtgcatg	gaatccctgt	ctgttagcca	240
caggcctctt	tagctctata	cattcaaaat	aactactgta	gtagaaaata	gataagcttc	300
agctgagttg	gcttttgata	gtggaaaaaa	aacaaaattt	gactttttat	ggccaaaatt	360
ccttggtgac	agctgtgatg	ttctaataatg	atgtgggaat	atgtcagtc	acagaacctg	420
catcctgtaa	aaacaccttt	ggggtagacg	ataaaagtca	tttttaaggc	aaataacttac	480
catgtgactt	tttattacca	aatgcatcag	tagtggagct	ggtatgttgt	ttcataggat	540
ggaacattta	gaagtcacga	gaaaaataaa	ttttaaaaaa	agggtgaaaa	gttacggcaa	600
acctgagatt	tcagcataaa	atcttttagta	tgaagtgaga	gaaagaagag	ggaggctggt	660
tctgttgctc	gtatcaatag	gttatctgtg	tccctcatct	tgggtgttaca	gtgttatttc	720
tgtcagtatt	atgaatatgt	ggttgaccca	tctgttcaaa	tgtaccaaca	ttttcgaaag	780
aattcattca	aatctcttat	gccaacagaa	aagttccctc	ttgtttaata	tctctttacc	840
tcagtcctac	attttgattc	tctggaggag	attttagctt	gtcttaaaaa	gccaaatttg	900
gagtcacaa	gcctgctgaa	cctgatgggg	cagctttttg	aacagctttc	tggaagtaag	960
aacttcagtt	gaaaagccct	ttgatcgctt	cagcccgga	catgcccttc	agatggctta	1020
ttctcagtaa	agctttatgt	agactgtgac	actgtatatg	tgtgactcgt	acaactttga	1080
cgtgtttctg	aagtggttta	atcgtatttg	ttattagctt	ctttgtggaa	atgcaatttt	1140
tatactaaaa	acattgctta	tttgcaatgc	aatatgttat	aaatttggtg	tttatattac	1200
tggtattagt	cttagcctaa	tgaacctaat	tatttttctt	tctgtattct	ttgcttcctc	1260
aaatagcatc	tgcagcaatt	ggaatgagaa	atccagatat	gtgtttcaag	tagtacattg	1320
ctgaatcac	aaatcacttg	atcacagtat	tgtatataat	ccctgatcct	atttgtttca	1380
ttttattgta	aattcccat	tgcataaaaa	cctaatagata	gtgattggta	agtaaaaaaca	1440
aatggtgtat	tgcttttcat	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaactcg	1500
ag						1502

<210> 186

<211> 3308

<212> DNA

<213> Homo sapiens

<400> 186

ccacgcgtcc	ggcccagggc	tgtctgtctc	caaagcccaa	ccataactca	catccccatt	60
ccagctcctc	tgggtgagtc	tgttccccct	cagcctcact	ttccttatcc	tgtcaaatga	120
aggatttggg	atgacttaag	ttattcaagc	aacaaacact	tactgaattg	tcttgccact	180
tccagggtga	cattatggag	ttctgtgatt	ctgcaagagg	ccagagggga	caagggtcaag	240
tgggtgttca	cctggccctc	catcttcctc	ctgtgcgtca	ccattcccaa	ctgcagcaag	300
ccccgcgtgg	agaagtctct	catggtcacc	ttcatcaccg	ccacgctgtg	gatcgctgtg	360
ttctcctaca	tcatggtgtg	gctggtgact	attatcggat	acacacttgg	gatcccggat	420
gtcatcatgg	gcattacttt	cctggcagca	ggacaagtgt	ccagactgca	tggccagcct	480
aattgtggcg	agacaaggcc	ttggggacat	ggcagtcctc	aacaccatag	aagcaacgtg	540
tttgacatcc	tggtaggact	tgggttaccg	tggggcctgc	agacctgggt	tgttaattat	600
ggatcaacag	tgaagatcaa	cagccggggg	ctggtctatt	ccgtggctct	gttgtgtggc	660
tctgtcgctc	tcaccgtcct	cggcatccac	ctaaacaagt	ggcgactgga	ccggaagctg	720
ggtgtctacg	tgctggttct	ctacgccatc	ttcttgtgct	tctccataat	gatagagttt	780
aacgtcttta	ccttcgtcaa	cttgccgatg	tgcggggaag	acgattagcg	ctgagtcgcg	840
gccccctggg	gctgatctgg	acaccctgtg	acactggcgt	cctcctctcc	cctccttccc	900
ccaccacagg	tctctcctgc	ataggcagcc	actgtccgtt	ctttcacaca	ctggaaggaa	960
gagccatcgt	tgctcttctg	tggccacagc	caagctgctg	ggcatcctcc	tcctccttgg	1020
agttccaccc	ctgcaaggct	ggatttgggg	gccattatct	gagcagcttc	aaagaccctt	1080
gagctgccaa	ccacggagat	gtgccagca	tctcatctct	cctgcacact	ttagtcagaa	1140
ggacttctgc	atgcagtttg	tctttctggt	ctgcaggcag	cttcagaatt	gaggtcattt	1200
gtgagcacia	gatctcatag	ggcagggtgca	aaataggaat	gttgtttctca	agtgtcacct	1260
ccagcccaga	ggtgttctct	taggcagcat	gtgctcctgg	gagcctctga	cttttctgtg	1320
aagcaccac	agtttggaa	gggcaagacc	tcaacctgtt	ggggtttaag	gcccattgatg	1380
gcagacattc	taccctttt	cctggaaaaa	ctggaagaat	gaaaataatt	tttttctgtg	1440
gaagagagaa	aatgagtga	tattcttctc	acttttattg	atgcattcag	agaataagca	1500
atgaaatatt	aaaaaatgaa	acatcatata	ggtcatcata	cttgaaaatt	atcattccat	1560
atgaaaggat	catgatacac	acaaaaaag	taatgatcgt	aaagacacaa	atcctctgtg	1620
tgccatcttg	cattggcact	gagggtgtttg	gttttgaata	gggaaaaaga	gacaggatct	1680
cgtgtgttcc	cccaggtagg	tcttgaactc	ctggcctcaa	gtgatcctcc	tgcttgacc	1740
tcccaaagt	ctggattaca	agcgtgagcc	cctgcaccgc	gccaagcag	ttgcttcttt	1800
ttttctcttt	tttttttttt	ttgagatgga	gcctcactct	gttgcccagg	ctggagtgca	1860

gtggcgcgat	ctccactcac	tgcaagctcc	gcctcccggg	ttcatgccat	tctcctgcct	1920
cagcctcccc	agtagctggg	actacaggcg	cctgccacca	caccagcta	atTTTTgtA	1980
TTTTTggtac	agacagggtt	tcaccgtgtt	agccaggatg	gtcttgatct	ctgatctcgg	2040
atccgccacc	ccggcctcca	aagtgtctga	ttacaagcgt	gagccaccgg	gccccgcaa	2100
gcagttgctt	cttatgcaac	atgttgggtg	ggacttgtcc	acgggccagg	ccaataaaat	2160
tcttaatcct	gcagagaggc	agtaccctca	tcaccccatc	actggaaaac	aaatgtttaa	2220
gctatcaaga	gagggaaatgt	gcagcttggg	tctagatgca	tggtttggag	gatctacctt	2280
tggcctaag	ggaatgtccc	aaacaacaga	gccttctttg	ctgtcactcc	agaattctct	2340
acacagaatt	tcccaagtcc	attcaggaca	gacgcgcagt	cctctttcaa	tggagaaga	2400
gaggactttt	cccctcctga	aaaatgactg	gagtgtgaac	aaggcagctc	tgtttttcta	2460
aataagttgt	tcttgtgagt	tttttctggc	cactgggcat	ctctgccctc	acttttcatc	2520
cctgcctctt	aagctgcaga	ccccatgacc	acactgtctg	cttccttgag	cttcccgcac	2580
gaggcttgca	cctgggggac	ctggagacc	tcgggacaga	actgtggctg	agccactgtg	2640
gccaactcct	ggggagctcc	acagtggggg	ttgctgggtc	gtgaggctga	gtctccattt	2700
cagagcacac	actccctggc	agggcgccct	cgctgtgtc	tctgcccag	cagccgccag	2760
cagggaaatag	ttgctggtgt	ctgagcacia	agagagcttt	gattacctag	agaggaaaaa	2820
ggctgtcagc	cagatgcagc	caggcccagg	ggtagatata	ggagttgcta	aggaaggggc	2880
cgagccagga	gagggcaggc	agatccacaa	agcccaaggg	gatgcaggct	gggtgtggtt	2940
tctgagggaa	ctaaccacaa	agcaggtaga	tggaaatcaga	ggactcttgt	gtcctgaaag	3000
aacctcttta	aaacaacta	aaaccaagaa	cttctggggc	tgttcacaca	ttgttcaagt	3060
cacccaaga	tcgttctggc	acgtgtagct	gaacaccacc	atctttgttc	attctctctc	3120
taatgggcaa	agcaggatca	tcgagttgaa	aagttgtaaa	taatgaggat	atttatcccg	3180
ctatttattt	tttcaataac	tgtgacctcc	tgcactgtga	atgctctgtg	acatgagatt	3240
cttagtttaa	taaaactgtc	attaaatttg	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	3300
aaaaaaaaa						3308

<210> 187

<211> 1769

<212> DNA

<213> Homo sapiens

<400> 187

agaaaaattg	cagggaccca	ccccagactt	gtgagtgcga	gtgaagcagg	agcagccctg	60
gccatcactg	tttctttgac	gtgtacatcc	catcctgaga	tgcagctggg	ctgggagccg	120
ccacctgggt	ggatctgatt	cctggatttc	cccacctggg	ggasagggtg	cccacctgtt	180
tctcctcctt	aggtccatgt	gaaatctgar	gtccttgetg	tcaagttgtc	acaagaaata	240
aactacgcaa	agagcctcta	ctatgaacag	cagcttatgt	taagactcag	cgaaaaccga	300
gagcagctgg	agctggactc	ctgaagcccc	gctgctgaga	tgggcgctcc	cgacacagcg	360
cagaccaccc	aggaggaaag	agggccagct	ctcagctgac	gatggaggga	gaaccggagt	420
cggttttggg	gaagtgttca	aggaatgagg	gaaagtaaat	cctcatgagg	aaaagtacaa	480
atggaaatcg	tattaatttg	tgaggcaggg	agttatttta	gattatggga	aataattttt	540
aaaggatttg	gttaataaac	gtttaaaaac	atgtactgag	atgaatctaa	tttttagatt	600
gccctgtatt	ttgttaacat	gtatatatgt	acaacagtgt	gtttgtaaat	atataggaac	660
gtttctgaac	agggctctgtg	ctatgtgtaa	aggtttgtta	actgtaaagt	aatataaagt	720
tatatgggat	cttctattgc	actaattcta	gatgtctaata	tcaggatact	gtctatagaa	780
aggcattctt	aaaagttaaa	gaatgttacg	tcttagtttt	ggagactaaa	gtattcccag	840
taaagtgggt	tgaggtgagg	gctgtgggtc	tgaaggggac	gcctttgaca	tcgtggctgt	900
ccagttgggc	tgtgagctgt	ggcaccaggg	actggcgctg	gcccttcaga	aggatctagg	960
agaggggctt	gggagcccac	ttttaatttc	tcaccccat	tttacaagaa	gtgcttagat	1020
tcttacaac	tatgatgtaa	gttatccatt	tggctttttc	ctaactagtc	ttaccaaac	1080
tagggggaaa	cctgtgtctc	attaccacat	gggtgcaagt	cagcattgta	agttttctca	1140
ggttattatt	attagagagg	ttggaaacat	tggtaaac	tgttgattga	gaaggaaaaa	1200
aaaagtccca	ttgaactgtt	gcaacaaatc	agaaatccac	ataaaagtgc	tctcctgcct	1260
gggcagcaac	aaccaagaac	aaagccccgg	gactgttttc	tttttaataa	agccacaggg	1320
aggcatcgta	gctccacagc	ccgaggggac	acaggatgga	aacccagga	tgagaaggga	1380
gcagggagag	ttccagaaaag	ggggatgaaa	taggagtatt	aaaaagctgc	gttggttaagt	1440
ttttcatgga	accaagattt	gacaaaggca	tctcttatcc	ttggttttaa	attcctgtctg	1500
ggagcaaggc	ctggtatgag	cgccctgggt	cttgtttttg	gtgtttcgct	tttctgtaag	1560
gattaagcag	ataggagaa	gggaaaaggg	gcctcacttt	agaatgaatg	agtcaccttg	1620
tgatttttaa	atTTTTattt	taataaagct	aatcaatttc	taaaaaaaaa	aaaaaaaaaa	1680
aaaaaaaggg	cggccgctct	agaggatccc	tcgagggggc	caagcttacc	gtgcatgcga	1740

cggtatagct ctctcctata gtgagccta

1769

<210> 188

<211> 1677

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (537)..(537)

<223> n equals a,t,g, or c

<400> 188

```

ccccccgggt cgacccaagc gtccggactt tttttatttt agctattcca gggggtttga      60
agtagtactg cattgtgatt ttaatttgca ttccctgat gattaatagt gataagcata      120
ttttcatata atattttacca tttattttat tcttgtttg aaatatctgt tcaagtccta      180
tgcccatttt aatgggacag tttttctggt tattattgat tcatattatt gacttatagt      240
aataattttt gaattgatct ctttattatt atgaaatgyt tctttttatt tgtggtaata      300
ctcatcatca tgaatatctaa tttgtctgat attattatag ccacttatac ttactgtata      360
cctgattatt tttccatac ctttatcttc aatttatctg tatatttgaa ttcaaagttc      420
atctcttgag cctgaaagta ataagcacct tgaacccgga tctttataac taaatatgat      480
tctccagtaa aatttatcag ggttctctgg acaagtggct gattgattgt agagcangga      540
taagaagagt atatgctgaa cctgaatcat ttttgtggtg ccaaaagtaa ggaagtacac      600
aaaaaaattg agaagatata awgaaatgca caaaaactaa cctgaagtga ctctyaatga      660
ccatatctkg gacaatttga gtaaaaaat aagtaacaat aatggatgat atcttataag      720
ataatataaa acaaatatca atgagtctat gatgatatag aattagaatg tataaatggg      780
aggaagggga aaattctttg cttaagcaga ataataatta attaatataa aaagaataat      840
ggaaatggta gaaatagaaa gtcaacattt ggcaagcacc acagtaataa ttgttgcagg      900
caagaatcat caatggatgc taaagtttgt gagaaaaagt ttgatgagaa atgggctatt      960
tacataacct caaaggcttt tcccacaaga tactgttaat tacaaagggg aaaatattga     1020
gaaacatgga agacagcacc ttaaccaaat gattgaagtt aataccatta gtaatgcaac     1080
aaatcagtat cgtgtgcctc ctgatatgat gcactgagaa gggcacaagc atcaccttta     1140
tggtattctt gcaaaaaatg cataatctaa attcaacat gaagaaatat tagaaggatg     1200
ttctatgact agtcagtact gctcaaaaat gtcaagatta tgaaagacaa agaaagacta     1260
aggtactttc cagatttaaa gaaattaaat agacaggact actaaatgca atatatgagt     1320
ctgaattgga ccctggacta aaattaggca gacagttggt gaattttgag tcaagtctgt     1380
agagtgttta atagtatttc tggttttgat catcataata tggttattta agatgttaac     1440
atttggtgga tctgggtgaa aagtatatga ggattctctc gcagtatttt tgcaattttt     1500
ttaaatctga aattctttta aaatgagaag ttggctgggc acagtggctc acacctgtaa     1560
tcccagcact ttgaaacacc aaggcaggag actcgcttga gcccaggagt ttgagaccat     1620
cctgcgtaag atggcaagac tccatctctt taaaaaaaaa aaaaaaaggg cggccgc      1677

```

<210> 189

<211> 2709

<212> DNA

<213> Homo sapiens

<400> 189

```

ggcacgagat ttcctacagg tgaaacgcca tcattaggat tcaactgtaac gttagtgtca      60
ttaaactcac tagcattttt attaatggcc gttatctaca ctaagctata ctgcaacttg     120
gaaaaagagg acctctcaga aaactcacia tctagcatga ttaagcatgt cgcttggcta     180
atcttcacca attgcatctt tttctgcctt gtggcggttt tttcatttgc accattgatc     240
actgcaatct ctatcagccc cgaaataatg aagtctgtta ctctgatatt ttttccatgc     300
ctgcttgccct gaatccagtc ctgtatgttt tcttcaacct aaagtttaaa gaagactgga     360
agttactgaa gcgacgtgtt accaagaaaa gtggatcagt ttcagtttcc atcagtagcc     420
aagggtggtt tctggaacag gatttctact acgactgtgg catgtactca catttgcagg     480
gcaacctgac tgtttgcgac tgctgcgaat cgtttctttt aacaaagcca gtatcatgca     540
aacacttgat aaaatcacac agctgtcctg cattggcagt ggcttcttgc caaagacctg     600
agggctactg gtccgactgt ggcacacatt cggcccactc tgattatgca gatgaagaag     660
attcctttgt ctgagacagt tctgaccagg tgcaggcctg tggacgagcc tgcttctacc     720
agagtagagg attccctttg gtgcgctatg cttacaatct accaagagtt aaagactgaa     780

```

ctactgtgtg	tgtaaccggt	tcccccgta	accaaaatca	gtgtttatag	agtgaaccct	840
attctcatct	ttcatctggg	aagcacttct	gtaatcactg	cctgggtgtca	cttagaagaa	900
ggagaggtgg	cagtttattt	ctcaaaccag	tcatittcaa	agaacaggtg	cctaaattat	960
aaattggtga	aaaatgcaat	gtccaagcaa	tgtatgatct	gtttgaaaca	aatatatgac	1020
ttgaaaagga	tcttaggtgt	agtagagcaa	tataatgtta	gtttttctg	atccataaga	1080
agcaaattta	tacctatttg	tgtattaagc	acaagataaa	gaacagctgt	taatatTTTT	1140
taaaaattct	atTTTTaaaa	tgtgattttc	tataactgaa	gaaaaatata	ttgctaattt	1200
tacctaatgt	ttcatccttt	aatctcagga	caacttactg	cagggccaaa	aaagggactg	1260
tcccagctag	acctgtgaga	gtatacatag	gcattacttt	attatgtttt	cacttgccat	1320
ccttgacata	agagaactat	aaatTTTgtt	taagcaattt	ataaatctaa	aacctgaaga	1380
tgtttttaaa	acaatattaa	cagctgttag	gttaaaaaaa	tagctggaca	tttgttttca	1440
gtcattatag	attgcttttg	tccaatcagt	aatTTTTtct	taagtgtttt	gtgattacac	1500
tactagaaaa	aaagtataag	gctaattgct	gtgtgggttt	agtcgatttg	gctaaactac	1560
taactaatgt	gggggtttta	tagtatctga	gggatttggt	ggcttcatgt	aatgttctca	1620
ttaatgaata	cttcctaata	tcgttggctc	tactaatatt	ttccaatttg	ctgggatgtc	1680
acctagcaat	agcttggatt	atatagaaag	taaactgtgg	tcaatacttg	catttaatta	1740
gacgaaacgg	ggagtaatta	tgacacgaag	tacttaatgt	ttatttctta	gtgagctgga	1800
ttatcttgaa	cctgtgctat	taaatggaaa	tttccataca	tcttcccat	actatttttt	1860
ataaaagagc	ctattcaata	gctcagaggt	tgaactctgg	ttaaacaaga	taatatgtta	1920
ttaataaaaa	tagaagaaga	aagaataaag	cttagtcctg	tgtcttttaa	aaattaaaaa	1980
ttttacttga	ttcccatct	atgggcttta	gacctattac	tgggtggagt	cttaaagtta	2040
taattgttca	atatgttttt	tgaacagtgt	gctaaatcaa	tagcaaacc	actgccatat	2100
tagttattct	gaatatacta	aaaaaatcca	gctagattgc	agtttaataa	ttaaactgta	2160
catactgtgc	atataatgaa	tttttatctt	atgtaaatta	tttttagaac	acaagtggg	2220
aaatgtggct	tctgttcatt	tcgtttaatt	aaagctacct	cctaaactat	agtggctgcc	2280
agtagcagac	tgttaaattg	tggtttatat	actttttgca	ttgtaaatag	tctttgttgt	2340
acattgtcag	tgtaataaaa	acagaatctt	tgtatatcaa	aatcatgtag	tttgtataaa	2400
atgtgggaag	gatttattta	cagtgtgttg	taattttgta	aggccaacta	tttacaagtt	2460
ttaaaaattg	ctatcatgta	tatttacaca	tctgataaat	attaaatcat	aacttggtaa	2520
gaaactccta	attaaaaggt	tttttccaaa	attcagggtta	ttgaaaactt	ttcattttat	2580
tcatttaaaa	actagaataa	cagatatata	aaagtgttaa	tctttgtgct	atatgggatg	2640
aaatacaata	ttgtactcag	tgttttgaat	tattaaagtt	tctagaaagc	aaaaaaaaaa	2700
aaaaaaaaaa						2709

<210> 190

<211> 813

<212> DNA

<213> Homo sapiens

<400> 190

ggcacgagat	cattttctgt	cccctcctat	cttaggctga	ccggttccct	gatgtgttac	60
ctgcttctgc	tactgatcca	aactgcagaa	cttctcattc	atccccaagg	cctccaggca	120
gtatccaatg	gggaatcagc	tctaaaagga	accagaccaa	cgttttccag	ccccttcatt	180
ctgggtgactg	aggggaggaa	agaatgggag	ggggatttct	tgtctagtgg	atggaaagga	240
aacacactgt	caaattacta	tatctccttg	gttttctatt	acagtagaat	tctccagcca	300
tatttttatt	gtctatgggg	gaagttggag	atgggtgacct	tgattagaag	tgtctggagg	360
gggataaatg	gaggggataa	gatttcagtt	ggttttggaa	aatgttaaag	tcttaaaata	420
atgcgtccca	tctgaagaat	tttttctaaa	accagagttt	ataaaaaat	caactgatata	480
gctgcccccc	tcatttccct	gccacaggag	atgtcttgga	ctagagacac	ttgtttaata	540
atagcttgct	tctgatattc	ccagtagctt	ccctctgtgt	gaggaaagga	tagaaatggt	600
caggacatca	tcatacaggc	tcctcatcta	caaagttcca	gtagcagtga	cgcctacacg	660
gaagacttgg	aactgcacaa	aggctggggt	cacctcagtg	acatctgacg	ctgtccaacc	720
agaagttcga	tttttgttct	gggggtgaag	gaggaaacag	actgtactaa	aggactaaaa	780
taatttgtct	atactaaaaa	aaaaaaaaaa	aaa			813

<210> 191

<211> 2288

<212> DNA

<213> Homo sapiens

<400> 191

ccacgcgtcc	gggggctgca	aggacctgag	ctcagcttcc	gccccagcca	gggaagcggc	60
aggggaaagc	accggctcca	ggccagcgtg	ggccgctctc	tcgctcgggtg	cccggcccca	120
tgtgggcccgt	cctgagggtta	gccctgcggc	cgtgtgcccg	cgcctctccc	gccgggcccgc	180
gcgcctatca	cggggactcg	gtggcctcgc	tgggcaccca	gccggacttg	ggctctgccc	240
tctaccagga	gaactacaag	cagatgaaag	cactagttaa	tcagctccat	gaacgagtgg	300
agcatataaa	actaggaggt	ggtgagaaa	cccagcact	tcacatatca	agaggaaaac	360
tattgcccag	agaaagaatt	gacaatctca	tagaccagg	gtctccattt	ctggaattat	420
cccagtttgc	aggttaccag	ttatatgaca	atgaggaggt	gccaggaggt	ggcattatta	480
caggcatttg	aagagtatca	ggagtagaat	gcatgattat	tgccaatgat	gccaccgtca	540
aaggagggtgc	ctactaccca	gtgactgtga	aaaaacaatt	acgggcccac	gaaattgccca	600
tgcaaacagg	ctcccctgca	tctacttagt	tgattcggga	ggagcatact	tacctcgaca	660
agcagatgtg	ttccagatc	gagaccactt	tggccgtaca	ttctataatc	aggcaattat	720
gtcttctaaa	aattattgcac	agatcgagc	ggatcgagg	tcctgcaccg	caggaggagc	780
ctatgtgcct	gccatggctg	atgaaaacat	cattgtacgc	aagcagggtta	ccattttctt	840
ggcaggaccc	cccttggtta	aagcggcaac	tggggaagaa	gtatctgctg	aggatcttgg	900
agggtgctgat	cttcattgca	gaaagtctgg	agtaagtgc	cactgggctt	tggatgatca	960
tcatgccctt	cacttaacta	ggaagggtgt	gaggaatcta	aattatcaga	agaaattgga	1020
tgtcaccatt	gaaccttctg	aagagccttt	atctcctgct	gatgaattgt	atggaatagt	1080
tgggtgctaac	cttaagagga	gctttgatgt	ccgagagggtc	attgctagaa	tcgtggatgg	1140
aagcagattc	actgagttca	aagcctttta	tggagacaca	ttagttacag	gatttgctcg	1200
aatatttggg	taccagtag	gtatcggttg	aaacaacgga	gttctctttt	ctgaatctgc	1260
aaaaaagggt	actcactttg	tccagttatg	ctgccaaaga	aatattcctc	tgctgttctt	1320
tcaaacatt	actggattta	tggttggtag	agagtatgaa	gctgaaggaa	ttgccaagga	1380
tggtgccaa	atggtggccg	ctgtggcctg	tgcccaagt	cctaagataa	ccctcatcat	1440
tgggggctcc	tatggagccg	gaaactatgg	gatgtgtggc	agagcgtata	gccaagatt	1500
tctctacatt	tggccaaatg	ctcgtatctc	agtgtggga	ggagagcagg	cagccaatgt	1560
gttggccacg	ataacaaagg	accaaagagc	ccgggaagga	aagcagttct	ccagtgtgta	1620
tgaagcggct	ttaaaagagc	ccatcattaa	gaagtttgaa	gaggaaggaa	acccttacta	1680
ttccagcgca	agggtatggg	atgatgggat	cattgatcca	gcagacacca	gactggctct	1740
gggtctcagt	tttagtgag	ccctcaacgc	accaatagag	aagactgact	tcggtatctt	1800
caggatgtaa	ctggaataaa	ggatgttttc	tgttggacat	gtactgaaaa	ttaacacatg	1860
tagtagcctt	aaaatttttag	acttctcgaa	catgaggctg	ttacagtaat	ttttttaaca	1920
ctgtgcattg	tacttttcta	ccttaaaaaa	atcagtgagg	atattttatt	aatgaacatc	1980
aattcctttt	aaattttctt	agagaaattt	ctctgtggct	cagttttacc	accataaag	2040
cggagacagt	aatttatggg	atcctttctg	accacaaaag	tatgaaaagt	tctgtaatct	2100
gtaaactcag	ttctgtaatc	tgtattattg	agatgattaa	tataaagttg	tattttcact	2160
gaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	2220
aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	2280
aaaaaaaaaa						2288

<210> 192

<211> 3758

<212> DNA

<213> Homo sapiens

<400> 192

ccacgcgtcc	gctttttctc	aggatgaata	ttttcctggc	cgactcattg	atccttggtta	60
caaataaact	tctggaagac	ccagagagag	gaaaacacag	gagaaattga	gcgatgtacg	120
tacatcaaat	accactactc	ctcagcaacc	atccccagga	acctcacttt	caatatcacg	180
aagaccatcc	gtcaggatga	gtggcatgcc	ctacacctgc	gcagaatgac	ggctggcttc	240
atgggcatgg	cgggtggcat	catcctcttt	ggctggatca	tcggcgtgct	gggctgctgc	300
tgggaccgag	gccttatgca	gtacgtggca	ggctgctctt	cctcatggga	gggaaaacag	360
tgggaattaaa	gagtgtctgc	cccagcccgg	cagggtggaag	taggatgggg	aaaacgttct	420
caccagaccc	tgggacttct	atgctgcagc	atcgtgacct	gaggggtgga	tgcagttgcc	480
acagctcttt	gaggcaaagg	ccccgatgct	ctgtggacag	cctcaggctt	gggatggatt	540
tggcagttag	gaacttattg	taacagaaga	aagtcatcca	agatgcctga	ggaaagaaac	600
cttcaattga	gccagccggc	tggaaaatgt	ggccaagaaa	accgcagaga	ccaatgttcg	660
gaggagaaaa	ccagaaaagag	gggcctgcct	ggcccctttg	atcctttatg	gccgattccg	720
tggacattgc	tctcctcac	gccggcagcc	ctctcttgag	tacctcaatt	gcagtctcca	780
gacctcacc	cgcagggcat	tcctgggtcg	gtgtcccagt	cggtcacagt	catggatcct	840
ctgcagagca	gtagaaagtc	gggagggggc	cgtgcccctg	gtcaggaaag	gagcggcagg	900

aggaaagagg	agcatgagaa	ctcagaagaa	attgtaccta	ctcagaaggt	ggagtgagga	960
tagacgttcc	cagattcaaa	ggcatcatga	agtgtcatga	caagatagaa	aagactttgg	1020
gctggccaag	aaggaactgg	ataaaattat	gagtgaggta	cagcaggtgg	gaacagtgtc	1080
actgaaccct	atcaacagca	gagcatgaga	acgtgaattc	ctgctgctgg	ggaggcaatg	1140
aaatgatatg	ggccttcaga	tgtctatgaa	tccgtgacca	ccgtgggtgc	cagttttcaa	1200
gagggcttcc	catcaaatat	tgtgcgcaaa	ggatggatgg	atgaaaggaa	gagtgagcca	1260
ataaacgagg	gaacgccggg	aaaggcagcc	tcaagccggg	gggccctggc	acccccaccg	1320
tccctgagca	tcgagccggg	tcccgcctcg	gcccgaactg	gcccgcgcgc	gctcgcagcc	1380
ccgcggcgga	acccgagggc	ggcggcagcg	gttccttgaa	cgagccgggg	aatctggagg	1440
gagcacacag	gaaaggcaga	gccgcgagct	ggaccagcgg	caaatctcta	gaagatgacg	1500
ggttctttaa	aacgcttcga	aatcactgga	agaaaactac	agctgggctc	tgcttgctga	1560
ccttgggagg	ccattggctc	tatggaaaac	actgtgataa	cctcctaagg	agagcagcct	1620
gtcaagaagc	tcaggtgttt	ggcaatcaac	tcattcctcc	caatgcacaa	gtgaagaagg	1680
ccactgtttt	ctcaatcctg	cagcttgcaa	aggaaaagcc	aggactctat	ttgaaaaaaa	1740
tgctgcccg	ttttacattt	atctggcatg	gatgtgacta	ttgtaagaca	gattatgagg	1800
gacaagccaa	gaaactcctg	gaactgatgg	aaaacacgga	tgtgatcatt	gttgcaggag	1860
gagatgggac	actgcaggag	gttgttactg	gtgttcttcg	acgaacagat	gaggctacct	1920
tcagtaagat	tccatttga	tttatcccac	tgggagagac	cagtagtttg	agtcataccc	1980
tctttggcga	aagtggaaa	aaagtccaac	atattactga	tgccacactt	gccattgtga	2040
aaggagagac	agttccactt	gatgtcttgc	agatcaaggg	tgaaaaggaa	cagcctgtat	2100
ttgcaatgac	cggccttcga	tgggatctt	tcagagatgc	tggcgtcaaa	gttagcaagt	2160
actggtatct	tgggcctcta	aaaatcaaa	cagcccactt	tttcagcact	cttaaggagt	2220
ggcctcagac	tcatacagcc	tctatctcat	acacggggacc	tacagagaga	cctcccaatg	2280
aaccagagga	gacccctgta	caaaggcctt	ctttgtacag	gagaatatta	cgaaggcttg	2340
cgtcctactg	ggcacaca	caggatgcc	tttcccaaga	ggtgagccc	gaggtctgga	2400
aagatgtgca	gctgtccacc	attgaactgt	ccatcacaa	acggaataat	cagcttgacc	2460
cgacaagcaa	agaagatttt	ctgaatatct	gcattgaacc	tgacaccatc	agcaaaggag	2520
actttataac	tataggaagt	cgaaagggtga	gaaaccccaa	gctgcacgtg	gagggcacgg	2580
agtgtctcca	agccagccag	tgcactttgc	ttatcccgga	gggagcaggg	ggctctttta	2640
gcattgacag	tgaggagtat	gaagcgatgc	ctgtggagggt	gaaactgctc	cccaggaagc	2700
tgagttctt	ctgtgatcct	aggaagagag	aacagatgct	cacaagcccc	acccagttag	2760
cagcagaaga	caagcactct	gagaccacac	tttaggccac	cgggtgggacc	aaaagggaac	2820
agggtcctca	gccatcccaa	cagtgtcgtc	agaggggtccc	cagggcattt	tcatggcaag	2880
taccctcttg	ccccactcc	agcagtgtct	cccaaagtgt	gctctgtcac	ctgctttgca	2940
atcggtctcc	attagcgcat	gttttatttt	ggtgtgacgg	ttggccctcc	taaacacgga	3000
ctttcctcag	gctggttcaa	gacggaaaag	gactttcttc	tgttttcttc	caaagtgcga	3060
ccacagtgga	gagcccacgg	tgggcttagc	ctgcctaggg	ccttccattt	ctcttctttg	3120
accgtgctag	gaattccagg	aaagtgcatt	cctgccttgg	tgaccttttc	ctatgtctag	3180
gctcctccac	aggtgctgct	attttgtgag	ctccggctcc	tgtttagctt	ttatttcagt	3240
tctaacctca	gtccagaaac	atatgtgagg	ttgtttccct	cttcagccac	ggctacaata	3300
ccggaatg	ctagttttta	tttatttttt	taagtagtgc	ttcctaaatg	gtttgcatga	3360
gagccacctg	gggtacatgt	tgaaaactta	tttggggctc	accccaaac	taataaccca	3420
aatttgggga	tggggccag	gaatatgcat	ttttaaaaag	tcactgtccc	ttcccagggtg	3480
attctgtaag	ttgtccctca	actgtacttg	gagaaatcgt	gttttaaaagc	agtagtccac	3540
aaagtattct	gctcatgtgc	ccccaaaagt	atlttgaaaa	atcatgtata	ccctcaccca	3600
tctaagttga	tatctaaaat	tttatctaa	ttggtatcta	aaatttttca	tgggaagtta	3660
aatagttgac	aaagtatgta	tttctggtg	tcgtgtaaat	attgggtattt	taaaataaaa	3720
actgttacat	cactaaaaaa	aaaaaaaaaa	aaaaaaaaaa			3758

<210> 193

<211> 1534

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1212)..(1212)

<223> n equals a,t,g, or c

<400> 193

tcgaagatag gttcgagacg gtggatgttg cagctgatca tgcagttggg ttcggtgctg 60

ctcacacgct	gcccccttttg	gggctgcttc	agccagctca	tgctgtacgc	tgagagggct	120
gaggcacgcc	ggaagcccgga	catcccagtg	ccttacctgt	atttcgacat	gggggcagcc	180
gtgctgtgcg	ctagtttcat	gtcctttggc	gtgaagcgcc	gctgggttcgc	gctggggggcc	240
gcactccaat	tggccattag	cacctacgcc	gcctacatcg	ggggctacgt	ccactacggg	300
gactggctga	aggtccgtat	gtactcgcgc	acagttgccca	tcateggcg	ctttcttgtg	360
ttggccagcg	gtgctgggga	gctgtaccgc	cggaaacctc	gcagccgctc	cctgcagtc	420
accggccagg	tgctcctggg	tatctacctc	atctgtgtgg	cctactcact	gcagcacagc	480
aaggaggacc	ggctggcgta	tctgaacctc	ctcccaggag	gggagctgat	gatccagctg	540
ttcttcgtgc	tgtatggcat	cctggccctc	ggcctttctg	tcaggctact	acgtgaccct	600
cgctgccag	atcctggctg	tactgtctgc	ccctgtcatg	ctgtctcattg	atggcaatgt	660
tgcttactgg	cacaacacgc	ggcgtgttga	gttctggaac	cagatgaagc	tccttgga	720
gagtgtggga	atcttcggaa	ctgctgtcat	cctggccact	gatggctgag	ttttatggca	780
agaggctgag	atgggacacag	ggagccactg	agggtcacc	tgcccttcctc	cttgctggcc	840
cagctgctgt	ttatttatgc	tttttggtct	gtttgtttga	tccttttgctt	ttttaaaatt	900
gttttttgca	gttaagaggc	agctcatttg	tcctaaatttc	tgggcttcag	cgcttgggag	960
ggcaggaacc	ctggcactaa	tgctgtacaa	ggtttttttc	ctgttaggaa	gaaagttagg	1020
ccagctgccc	actgagtctt	ctgtccctga	agaaagggag	tattgggag	ggcttgggat	1080
ccggctactg	agagtgggag	agtgggagac	agaggaagga	agatggagat	tggaagttag	1140
caaatgtgaa	aaattcctct	ttgaacctgg	cagatgcagc	taaaactctgc	agtagtgctt	1200
ggagactgtg	anagggagtg	tgtgtgttga	cacatgtgga	tcaggcccg	gaagggcaca	1260
ggggctgagc	actacagaag	tcacatgggt	tctcagggtg	tgccaggggc	agaaacagta	1320
ccggctctct	gtcactcacc	ttgagagtag	agcagaccct	gttctgtctct	gggctgtgaa	1380
ggggtggagc	aggcagtggc	cagctttgcc	cttctgtctg	tctctgtttc	tagctccatg	1440
gttggcctgg	tgggggtgga	gttccctccc	aaacaccaga	ccacacagtc	ctccaaaaat	1500
aaacatttta	tatagacaaa	aaaaaaaaaa	aaaa			1534

<210> 194

<211> 2664

<212> DNA

<213> Homo sapiens

<400> 194

ggttgctggc	ccaggtgagc	gggcgcgctg	gtccaggtga	gcggggcgct	ccccgcgacg	60
gcgctgcctg	cccagggcgg	ttcacgtaaa	gacagcgaga	tcctgagggc	cagccgggaa	120
ggaggcgctg	atatggagct	ggctgctgcc	aagtccgggg	cccgcgcgcg	tgccctagcgc	180
gtcctgggga	ctctgtgggg	acgcgccccg	cgccgcggct	cggggaccgc	tagagcccg	240
cgctgcgcgc	atggccctgc	tctcgcgcgc	cgcgctcacc	ctcctgctcc	tcctcatggc	300
cgctgtgtgc	aggtgccagg	agcaggccca	gaccaccgac	tgagagagca	ccctgaagac	360
catccggaac	ggcgctcata	agatagacac	gtacctgaac	gccgccttgg	acctcctggg	420
aggcgaggac	ggtctctgcc	agtataaatg	catgacggat	ctaagccttt	cccacgttat	480
ggttataaac	cctccccacc	gaatggatgt	ggctctccac	tgtttggtgt	tcactttaac	540
attggtatcc	cttccctgac	aaagtgttgc	aaccaacacg	acaggtgcta	tgatccctgt	600
ggcaaaaagca	agaatgactg	tgatgaagaa	ttccagatatt	gcctctccaa	gatctgccga	660
gatgtacaga	aaacactagg	actaaactcag	catgttcagg	catgtgaaac	aacagtggag	720
ctctgttttg	acagtgttat	acatttaggt	tgtaaacccat	atctggacag	ccaacgagcc	780
gcatgcaggt	gtcattatga	agaaaaaact	gatctttaaa	ggagatgccg	acagctagt	840
acagatgaag	atggaagaac	ataacctttg	acaaaataact	aatgttttta	caacataaaa	900
ctgtcttatt	tttgtgaaag	gattattttg	agaccttaaa	ataattttata	tcttgatgtt	960
aaaacctcaa	agcaaaaaaa	gtgagggaga	tagtgagggg	agggcacgct	tgtcttctca	1020
ggtatcttcc	ccagcattgc	tcccttactt	agtatgcca	atgtcttgac	caatatcaaa	1080
aacaagtgtc	tgtttagcgg	agaattttga	aaagaggaat	atataactca	attttcacaa	1140
ccacatttac	caaaaaaaga	gatcaaatat	aaaattcatc	ataatgtctg	ttcaacatta	1200
tcttattttg	aaaatgggga	aattatcact	tacaagtatt	tgtttactat	gaaattttta	1260
atacacattt	atgcctagaa	ggaacggact	ttttttttct	attttaatta	cacataatat	1320
gtaattaaag	tacaacataa	tatgtgtgtt	ctctgtagcc	cgttgagcat	atgagtaagt	1380
cacatttcta	ttaggactac	ttmcaaggac	aaggtttcca	tttttccagt	tgtaaaattg	1440
gaaccatcag	ctgataacct	cgtagggagc	aacccagga	tagctaagt	ttatgtaata	1500
tgccatgaag	gtgatgtgaa	tgcgattcag	aagcatagcc	actcccattt	tatgagctac	1560
tcacatgaca	aatgtcatct	tttgctataa	cctttgcca	gtagagaaa	agatggattt	1620
aatgagataa	atgaaaagat	atttamccta	atatatcaag	gcactatttg	ctgttatgct	1680
ttgttattta	tttccagca	cttgttcctt	attgtagatt	ttttaagac	tgtaaccttt	1740

tactaactgt	ggctcttacta	aaatttgtgc	ttgatactgc	ttttcaaaaa	gcctttaatt	1800
agagccaaaa	ggatggaaaa	ggcaagatat	aaatgccttt	tatagatctc	ttatttacat	1860
tgaaaattat	taccatatgt	ttagagcaaa	tccaagaaaa	cttcaacagc	ttctgaagat	1920
gtctatgaat	gttgaaaact	tttcaatctc	ttggaatgct	cagttatggt	cctagaccgg	1980
tctttgctga	ctactgggtg	ttaacctttc	cctagcctgg	gacctcaagc	catatatatc	2040
ctttgggtga	cccatggcca	aagttattaa	gatgaactga	ctttcaaagt	cagagaagga	2100
cagcataggg	agaggcgggt	atttgtaagt	cattacaggt	agaacagggc	agaaggaaaa	2160
gtatgttctg	gagaaagggc	catgttccta	actttggaga	tatgtcattg	ccgggaacct	2220
agtatcttcc	aacttgaatt	gggtggcagct	gttccagtga	gacaaggcac	atgtatgcct	2280
tgtgggctaag	tgagcaaaact	gggtttccac	ttaaagtgtt	gggaccctca	attgattctt	2340
tatttcaaac	ctttataaaa	ggtacagttt	tgtaagccat	tattaataat	taatgccttat	2400
cggctgggca	cattggctca	cacctataat	cccagcactt	gggaggctga	ggcggttgga	2460
tcacttgagg	tcaggagttt	gagaccagct	ggccaacatg	gtgaaacagc	gtctctacta	2520
aaaatacaaa	aattttgccg	gcgtgggtggc	gcatgcttat	agtctcagct	actcaggaag	2580
ctgagggtacg	agaatcactt	gaaccagga	ggtggaggtt	gcagtgaagc	gagattgtgc	2640
cactgcactg	cagcctggct	cgag				2664

<210> 195

<211> 1076

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1029)..(1029)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1037)..(1037)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1040)..(1040)

<223> n equals a,t,g, or c

<400> 195

ggcacgaggg	gaaagccatg	ctcccaggac	tccttccttg	cagccttaaa	tcgggtctgta	60
cggaaaattc	cgcgcccttag	aaacccacgc	ttgggtgtaa	cttattattg	ttcttcctga	120
cctacttcct	gtttatcact	tccgggttca	tcatTTTTggc	atttcgggtga	tcgggttgga	180
actattgaag	cccgccttca	ggttcttttc	cccattttcc	ctttgaaagg	aagacttctg	240
gcttctccta	aatctccggt	ctctgggtaa	ggggagtcca	agcctctgtc	atgaggaacg	300
gaaatgcgag	ggcctcggtt	gttactctaa	aatccgccct	cagcttgac	gccggaagct	360
gcgattcctg	cagcgggaaga	ggcgtgatct	ggccttcgac	tcgctatgtc	cactaacaat	420
atgtcggacc	cacggaggcc	gaacaaagt	ctgaggtaca	agcccccgcc	gagcgaatgt	480
aaccgcgcct	tggacgacct	gacgccggac	tacatgaacc	tgctgggcat	gatcttcagc	540
atgtgcggcc	tcatgcttaa	gctgaagtgg	tgtgcttggt	tcgctgtcta	ctgctccttc	600
atcagctttg	ccaactctcg	gagctcggag	gacacgaagc	aatgatgag	tagcttcatg	660
ctgtccatct	tgcccggtgt	gatgtcctat	ctgcagaatc	ctcagcccat	gacgccccca	720
tggtgatacc	agcctagaag	ggtcacattt	tggaccctgt	ctatccacta	ggcctgggct	780
ttggctgcta	aacctgctgc	cttcagctgc	catactggac	ttccctgaat	gaggccgtct	840
cgggtgcccc	agctggatag	agggaaacct	gccctttcct	agggaaacacc	ctaggcttac	900
ccctcctgcc	tcccttcccc	tgctgtctgc	tgggggagat	gctgtccatg	tttctagggg	960
tattcatttg	ctttctcggt	gaaacctgtt	gttaataaag	tttttctctc	tgaaaaaaaa	1020
aaaaaaaaana	raaaancn	ggggggggccc	ggaacccaat	tcscgggata	gtgagt	1076

<210> 196

<211> 943

<212> DNA

<213> Homo sapiens

<400> 196

ggcagcagct	ccgcccggcc	ccgaggggct	ctccccggag	gctcagcccc	ctctgctccc	60
catggggcaac	tgccaggcag	ggcacaacct	gcacctgtgt	ctggcccacc	accacacctt	120
ggtctgtgcc	actttgatcc	tgtgtctcct	tggectctct	ggcctgggcc	ttggcagctt	180
cctcctcacc	cacaggactg	gcctgcgcac	cctgacatcc	cccaggactg	ggtctctttt	240
ttgagatctt	ttggccagct	gacctgtgt	cccaggaatg	ggacagtcac	agggaaagtgg	300
cgaggggtctc	acgtcgtggg	cttgtctgacc	accttgaact	tcggagacgg	tccagacagg	360
aacaagaccc	ggacattcca	ggccacagtc	ctgggaagtc	agatgggatt	gaaaggatct	420
tctgcaggac	aactggctct	tatcacagcc	aggggtgacca	cagaaaggac	tgagggaacc	480
tgctatatatt	ttagtgctgt	tccaggaatc	ctaccctcca	gccagccacc	catatcctgc	540
tcagaggagg	gggctggaaa	tgccaccctg	agccctagaa	tgggtgagga	atgtgttagt	600
gtctggagcc	atgaaggcct	tgtgtctgacc	aagctgtctc	cctcggagga	gctggctctg	660
tgtggctcca	ggctgtctgt	cttgggtctc	ttcctgtctc	tcttctgtgg	ccttctctgc	720
tgtgtcactg	ctatgtgctt	ccaccgcgc	cgggagctcc	actggtctag	aaccggctc	780
tgagggcact	ggcctagtct	ccgacttgtt	tctcaggtgt	gaatcaactt	cttgggcctt	840
ggctctgagt	tggaagggt	tttagaaaaa	gtgaagagct	ggaatgtggg	ggaaaaataa	900
aagctttttt	gccccaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaa		943

<210> 197

<211> 1566

<212> DNA

<213> Homo sapiens

<400> 197

cgcgtccggc	gccccggcagc	tgtccaccga	tccccggccac	cgcggggggc	cacccccacc	60
ccgcgagccc	atggaggctc	cgggaccccc	cgcccttgcgg	actgcgctct	gtggcgggctg	120
ttgctgcctc	ctcctatgtg	cccagctggc	tgtggctggg	aaaggagctc	gaggcttttg	180
gaggggagcc	ctgatccgcc	tgaatatctg	gccggcggtc	caagggggcct	gcaaacagct	240
ggagggtctgt	gagcactgcg	tggagggaga	cagagcgcg	aatctctcca	gctgcattgt	300
ggagcagtc	cggccagagg	agccaggaca	ctgtgtggcc	caatctgagg	tggtaaggga	360
aggtgtctcc	atctacaacc	gctcagaggc	atgtccagct	gctcaccacc	acccccacta	420
tgaaccgaag	acagtcacaa	cagggagccc	cccagtcctt	gagggccaca	gccctggatt	480
tgacggggcc	agctttatcg	gaggtgtcgt	gctgggtgtg	agcctacagg	cgggtggctt	540
ctttgtgctg	cacttcctca	aggccaagga	cagcacctac	cagacgctgt	gagtacctgg	600
ccagcagcaa	gtacctgagt	cccagctcac	ctcctgggtc	ctgccccacc	gttccccctc	660
agtaccagg	gtgctgtctt	ctccatgggc	aagccctcag	gacggtgaca	gcgtgtctca	720
tgtgagccac	accccttttg	tctcctccag	ttgggggtgt	tcctttgtca	gatgttggct	780
gggaccagga	ctcagcctgg	gccagtctag	gagccagct	gagccctcct	gtgtcttttc	840
ccttcatgct	gccagcagg	aagagaacca	gtagggtgcca	gcccaggcaa	gcctgtggcc	900
cgcgtttctg	tggctgtggg	caggagctgg	gccttgtgtc	tagttgggtt	ttgctctgag	960
aaggggagct	gtgctgagg	ccctctgtgt	gccgtgtgtg	ctgtggggcg	ggtcgccaca	1020
gcctgtgtta	aagtgtttgc	tcttctctct	ctgcctcttc	tcgaggcagg	gggtccttgg	1080
ctggctgagg	cagtgtcacc	ttcctgagtg	tctcttttgg	cctctgcaga	atctgacccc	1140
tttgggcctg	gactccatcc	tgagggcaaa	ggaggatgca	gaggggtggc	tctgggcacc	1200
cttgtgggta	agcggggggc	gggggcggga	aaaactctgg	ccgccagttt	ttggctcctg	1260
cgggcaccaa	gcaggctcag	tgtctgatgc	ctgacatctc	ctcctgtcct	gggcctggaa	1320
cctgcagctg	agaaaatccc	tcaaccacct	cgtctcctcc	atcgccccctg	ctggggcccc	1380
cagctgaca	gtgggttgta	tgctgtcctc	tttccaccaa	ctggcctggg	cactgcccc	1440
aaataaagga	actctgcact	gcaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	1500
aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	1560
aaaaaa						1566

<210> 198

<211> 1067

<212> DNA

<213> Homo sapiens

<400> 198

taccggtccg	gaattccccg	gtcgacccac	gcgtccggcg	ccgggcagct	gtccaccgat	60
cccggccaacc	gyccccggcc	acccccaccc	cgcgagccca	tggaggctcc	gggacccccg	120

```

gccttgccga ctgcgctctg tggcggtgt tgetgcctcc tcctatgtgc ccagctggct 180
gtggctggta aaggagctcg aggcctttggg aggggagccc tgatccgcct gaatatctgg 240
ccggcggtcc aaggggcctg caaacagctg gaggtctgtg agcactgcgt ggaggagac 300
agagcgcgca atctctccag ctgcatgtgg gagcagtgcc ggccagagga gccaggacac 360
tgtgtggccc aatctgaggt ggtcaaggaa gggtgtcca tctacaaccg ctcaaggaca 420
tgtccagctg ctcaccacca cccacctat gaaccgaaga cagtcacaac agggagcccc 480
ccagtccttg agggccacag ccctggattt gackgggcca gctttatcgg aggtgtcgtg 540
ctgggtgtga gcctacaggc ggtggcttcc tttgtgctga ctctctcaag gccaaaggaca 600
gcacctacca gacgctgtga gtacctggcc agcagcaagt acctgagtc cagctcacyt 660
ctgggttctg cccacgttcc ctctcagacc cagggtgtg tcttctccac tggcaagccc 720
tcaggacggt gacagcgtgc tycatgtgag ccacaccct tttgtctyct ccagttgggg 780
tgtttccttt gtcagatgtt ggctgggacc aggactcagc ctggggcagc ctaggagccc 840
agctgagccc tctgtgtct tttcccttca tgctgccagc aggggaagaga accagttagt 900
gccagcccag caacctgtgg cccgcgttcc tgtggctgtg ggcaggagct gggccttgtg 960
tctagttggg ttttgcctg agaaggggag ctgtgctgag gccctctgtg tgccgtgtgt 1020
gctgtggggc gggtcgccac agcctgtgtt aaagtgtttg ctcttcc 1067

```

<210> 199

<211> 2078

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1177)..(1177)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1187)..(1187)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (2057)..(2057)

<223> n equals a,t,g, or c

<400> 199

```

ggcacgagga gttgtgcaga tacctggctg agagctggct caccttccag attcacctgc 60
aggagctgct gcagtacaag aggcagaatc cagctcagtt ctgcgttcga gtctgctctg 120
gctgtgctgt gttggctgtg ttgggacact atgttccagg gattatgatt tcctacattg 180
tcttgttgag tatcctgctg tggccctgg tggtttatca tgagctgatc cagaggatgt 240
acactgcctt ggagcccctg ctcatgcagc tggactacag catgaaggca gaagccaatg 300
cyctgcata caaacacgac aagaggaagc gtcaggggaa gaatgcaccc ccaggagggtg 360
atgagccact gmagagaca gagagtgaag gcgagcaga gctggctggc ttctcccag 420
tggtggatgt gaagaaaaca gcattggcct tggccattta cagactcaga gctgtcagat 480
gaggaggctt ctatcttggg agtggtggc ttctccgtat cccggggccac aactccgcag 540
ctgactgatg tctccgagga tttggaccag cagagcctgc caagtgaacc agaggagacc 600
ctaagccggg acctaggggg gggagaggag ggagagctgg cccctcccga agacctacta 660
ggccgtcctc aagctctgtc aaggcaagcc ctggactcgg aggaagagga agaggatgtg 720
gcagctaagg aaaccttgtt gcggtcttca tccccctcc actttgtgaa cagcacttc 780
aatggggcag ggtccccccm agatggagtg aaatgctccc ctggaggacc agtggagaca 840
ctgagccccg agacagttag tgggtgcctc actgctctgc ccggcaccct gtcacctcca 900
ctttgccttg ttggaagtga cccagcccc tccccctcca ttctcccacc tgttcccag 960
gactacccc agcccctgcc tgcccctgag gaagaagagg cactcaccac tgaggacttt 1020
gagttgctgg atcaggggga gctggagcag ctgaatgcag agctgggctt ggagccagag 1080
acaccgcaa aaccccctga tgctccaccc ctggggcccc acatccattc tytggtacat 1140
cagaccaaga agctcaggcc gtggcagagc catgagncca gccgttnagg aaggagctgc 1200
aggcacagta gggcttcttg gctaggagtg ttgctgtttc ctcccttgcc taccactctg 1260
gggtggggca gtgtgtgggg aagctggctg tcggatggta gctattccac cctctgctg 1320
cctgcctgcc tgctgtcctg ggcattggtgc agtacctgtg cctaggattg gttttaaat 1380

```

tgtaaataat	tttccatttg	ggttagtggg	tgtgaacagg	gctaggggag	tccttccac	1440
agcctgcgct	tgccctccctg	cctcatctct	attctcatc	cactatgccc	caagccctgg	1500
tggtctggcc	ctttcttttt	cctcctatcc	tcagggacct	gtgctgctct	gccctcatgt	1560
cccacttggg	tggttagttg	aggcacttta	taatttttct	cttgtcttgt	gttcctttct	1620
gctttatttc	cctgctgtgt	cctgtcctta	gcagctcaac	cccatccttt	gccagtcct	1680
cctatcccgt	gggcactggc	caagctttag	ggaggtccct	ggctctgggaa	gtaaaagagta	1740
aacctggggc	agtgggtcag	gccagtagtt	acactcttag	gtcactgtag	tctgtgtaac	1800
cttactgca	tccttgcccc	attcagcccc	gcctttcatg	atgcaggaga	gcagggatcc	1860
cgcagtacat	ggcgccagca	ctggagttgg	tgagcatgtg	ctctctcttg	agattaggag	1920
cttcttact	gtcctcttgg	gtgatccaag	tgtagtggga	ccccctacta	gggtcaggaa	1980
gtggacacta	acatctgtgc	aggtgttgac	ttgaaaaata	aagtgttgat	tggttagaaa	2040
aaaaaaaaa	aaatttctg	cggtccgcaa	gggaattc			2078

<210> 200

<211> 2494

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (920)..(920)

<223> n equals a,t,g, or c

<400> 200

ggagatgttt	aaggattacc	cgccagccat	aaaaccatcc	tacgatgtgc	tgctgctgct	60
gctgctgcta	gtsytccctsc	tgcaggccgg	cctcaacacg	ggcaccgcca	tccagtgygt	120
gcgcttcaag	gtcagtgcaa	ggctgcaggg	tgcctcctgg	gacaccgaga	acggcccgc	180
ggagcgctg	gctggggagg	tggccaggag	ccccctgaag	gagttcraca	aggagaaagc	240
ctggagagcc	gtcgtggtgc	aaatggccca	gtgaccccca	gacgcggaaa	ccgggtggca	300
gckcccagcc	tggccccaag	catggaaacg	cacaaccctt	aatcgccctg	agctactgct	360
tctaacacct	cttttccctt	gtgtgagggc	aaaccaggct	gcagggtggg	ttttcacttc	420
ctagggtagt	ttaattttta	aataggccaa	tgttggctag	tctgtgcctc	agttagatca	480
gtcagctccg	agtggctccc	gtgtcgtaac	agcaggagca	tggccgcaac	ttcccaggcc	540
gaggaagggc	ccccggctcg	gcctcttgag	agccccacc	ctgaactggc	cccagtcct	600
cttctgcct	ctctcatggc	ttgggctgga	gtgggctctc	tggacctgac	cagactgtgg	660
gtccctgcgt	ctcctgccca	ctctgaccgg	gcttccctcc	tccacgctta	gggtctgtcc	720
cgggtactca	gtcagcccag	tgggatctta	cccacttccc	tgaagggtgc	acctgcccga	780
ggctcaggct	gcccagcgcc	tcttccctga	cagttagagc	agggtctggc	gcctctgtcc	840
tggcccggga	cccgagggg	cccctcctcc	agagcctggg	cgcaagcgac	acaggctgcc	900
gctgctctcc	aggtgaaatn	cacaccagtc	cacgcccggg	cgcttgccct	gtctccctac	960
ttagaccag	tcattctaga	gggatccamc	gccamactgg	ccggcccacg	tcctgggtgc	1020
tgtcatgccc	agcttgaggt	gccacgtggc	cgctgccac	gtcccgggca	ctgtcatgcc	1080
cagcttgagg	tgccacatgg	ccgctgccca	cgctccgggc	actgtcatgc	ccagcttgga	1140
gtgccacgtg	gccgtgctg	tgacaggcag	tgttcttggg	gggtgggctg	catccaaggc	1200
tttgtaaac	ggctggacca	cgtctcctg	gcccagtgta	ccgggggaaag	ctgagccct	1260
ccctcctgtg	tttgctccca	ttactcaaaa	tgcaggacag	atcagggtcag	agcccaggaa	1320
ttctcacagg	ttcaccagc	gcccctctacc	tcctagcaag	tactttgtct	tgatcctcac	1380
tgagaaggcc	ccagggcagt	ggtcttctcc	atctccgctg	ttttggggtc	ttaggggtaca	1440
gcccaggcgg	tcactgccc	cctgccaggc	tgcagggaca	gttgggtgtg	agaataacac	1500
tggcttttgg	tagtgccatg	gccaggagtg	ggtttccctg	cgtctcctcg	tcccaggggc	1560
gcctgggtcc	tcccagctga	cggcagtaaa	tcacagtgta	gttggggcga	ctgtgaaact	1620
ggaatgctgt	tactttgata	attactttcc	agcagggtgt	ttccttcaca	atgggtttgt	1680
ttctttcctt	ctgatctgag	aagacatgaa	cgttttctct	tcaccgccgt	ggggtgtatt	1740
gactgggtccc	ccatgggctg	ctggaaaggc	ccggagatgc	atctgtggcc	tggggccatc	1800
aagatcaaag	aaccaggagg	cctgggagat	gcagctggat	ggggcgccct	gcagaccctg	1860
ccaggggggt	tgaggaccct	cccagggttc	ccactgcgga	acaggagtga	ctctggctgc	1920
caagatacct	tcatggtgtt	catgacaagt	ggaatcatta	ttttcaacca	ttgaaggggg	1980
atgcaggcaa	gacaccttcc	cagctgtccc	tagaggggac	aagccaggcc	ctctctgcag	2040
tcctcggcag	ctccggaaag	acacagtcag	gggcccggca	aacacttttg	ccacagcccc	2100
aaacaagcgc	caccgtggga	gaggagaggc	tgctgtcact	ggtaccggat	gcagacccca	2160
ccctgtctgc	aggccacccc	cacctccctg	cagctttgag	gctggcgggg	tctgctcctg	2220

ggaatggggt	gggagccaca	gggacgaccc	ggggcgggct	gatgtcttct	tgggggcaga	2280
ccagagagct	caagtttcag	agtcagaatt	aggcacttgg	agcgtttttg	ctggcttgca	2340
ctttcttatt	ttcttatttt	agagcgctta	aaaaatccgg	aaaaatgggg	tttaaaagaa	2400
ctgtctcttt	cagtctacat	ttttgtttta	tacgcttgag	caataaacgc	tgacttgcag	2460
acgtgaaaaa	aaaaaaaaaa	aaaaaaaaac	tcga			2494

<210> 201
 <211> 845
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (1)..(1)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (4)..(5)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (823)..(823)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (845)..(845)
 <223> n equals a,t,g, or c

<400> 201	
ntanntaatg	gcacatctcc ccttctattg ggaacacaag ctggagctcc accgcggtgg 60
cggccgctct	agaactagtg gatcccccg gctgcaggaa ttcggcacga ggtcaaggca 120
aaaatgggtc	aggtttggag agtcccccca ctcccttttga gtgttcagggt tttccttacc 180
atggctcatg	ctttccatca agcaccagag ttgcagtggc ttggcctctg gttctgggtg 240
aggttatttg	caggtggaga cggggggctg cacctgaaca tttctagtgt caccctccct 300
ctccttcctg	ggaacacagt ctccaggga gtaccttcct gccaggggaa gccaaggctg 360
ggccggccgc	cctacaagga gccacaggat tgcagccatg ggtgccacct ttcattggaag 420
gggagattta	tgggctttcc tggaaacccc aggctgtcct ggccaagagg aaagagggtg 480
ttacttcagg	agtttgacct tagttagata actaaaagaa tacatttccc ctcccttttc 540
tttatttctt	caataaaaaat gtacaaagta tcacccttct ccatgcccca atctgtgtta 600
aagtcacaat	ctatgggtgt agttctggga ttctgtcaaa ttctccttcc tgctctccaa 660
aatggacaat	tgtcgtaggg accacatgcc ccagagaatac aatggcctct gtgktctact 720
ggggtcaagc	ctgctagaac tcagcattca tgacaggggs taagtgtgca tgaaktgaca 780
ctgactacag	stargaaagc caggcgcaca aatgscctt tcnccccaag ggccggtctt 840
tccan	

<210> 202
 <211> 738
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (3)..(3)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (8)..(8)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (566)..(566)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (680)..(680)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (684)..(684)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (703)..(703)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (715)..(715)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (717)..(717)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (731)..(731)

<223> n equals a,t,g, or c

<400> 202

ccnctgtntct	ggccctctat	catttgcctg	ccttttagacc	tgcctcaagg	atatggcagc	60
gctagccttt	agctyccaca	gcacggatgg	gggtgatgcc	agttagaagt	gggtagttaa	120
cgtttgctga	gctgttcact	gtttmtctct	tctctttgga	agcacctctc	cgagccatgt	180
gagccccctg	atgccaccga	gcaggggcag	cttcatgacc	gatgtctggc	tgaggctgtg	240
gcggacactc	tcgggggttg	ctgcaggaga	gcaagccagg	aggacatggg	cctggacgac	300
acggcctcgc	agcaaagtgt	gtcagacgag	cagtgcaggg	cgtgcggccg	ggcggggagg	360
ctggctcccc	cacacctccc	acctgcattg	ctctccctcg	tgctcccaa	atcaccacaa	420
ccaaccaata	ccgcratcca	tgagggactc	ctcctgtgga	aaaggagagc	tgttccagaa	480
cacagaactg	atctcagggt	tttgaaaaaa	aaaaaaaaaa	aactcgaggg	ggggccccgt	540
acccaattcg	ccctatagtg	agtcgnatta	caattcactg	gcgtcgtttt	acaacgtcgt	600
gactgggaaa	accctggcgt	taccaactt	aatcgccttg	cagcacatcc	ccctttcgcc	660
agctggcgta	ataagcgaan	aggnccgga	cgatcggcct	ttccaacacg	ttggnagnagc	720
ctgaaatggg	ngaattggg					738

<210> 203

<211> 1145

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (9)..(9)

<223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (410)..(410)
 <223> n equals a,t,g, or c

<400> 203
 caggcagang ggctgagtc caggcacagg tgaggaactc aactcaaact cctctctctg 60
 ggaaaacgcg gtgcttgctc ctcccggagt ggccttgcca ggggtgttga gccctcggtc 120
 tgccccgtcc ggtctctctg gcccaaggctg ggtttccctc atgtatggca agagctctac 180
 tcgtgcgggtg cttctctctc ttggcataca gctcacagct ctttggccta tagcagctgt 240
 ggaaatttat acctcccggg tgctggaggc tgttaatggg acagatgctc ggttaaaatg 300
 cactttctcc agctttgccc ctgtgggtga tgctctaaca gtgacctgga attttcgtcc 360
 tctagacggg ggacctgagc agtttgtatt ctactaccac atagatcccn ttccaacca 420
 tgagtgggcg gtttaaggac cgggtgtctt gggatgggaa tcctgagcgg tacgatgcct 480
 ccatacctct ctggaaactg cagttcgacg acaatgggac atacacctgc caggtgaaga 540
 acccacctga tgttgatggg gtgatagggg asatccggct cagcgtcgtg cacactgtac 600
 gcttctctga gatccacttc ctggctcttg ccattggctc tgcctgtgca ctgatgatca 660
 taatagtaat tgtagtggtc ctctccagc attaccggaa aaagcgatgg gccgaaagag 720
 ctcataaagt ggtggagata aaatcaaaag aagaggaaag gctcaaccaa gagaaaaagg 780
 tctctgttta tttagaagac acagactaac aatttttagat ggtaagggtc acaaataggt 840
 tgatttcttt cttcagcttt ctgacatgct cagcccatct ctaatgagga ctcccagatc 900
 atcaactttat ggctgttarg tgtttcccat atgaaattag aggagctggg tcaggggagac 960
 aaaagtcttc tattagtctt atggatagct cctccttgag tgtattttgt gcaaaagatt 1020
 aagaagctgg actctactgc cattaaagct gagagaatcc taaggttatt tgtggcttcg 1080
 gggttatatt tattactact actactaata aatattcaac aagtaaataa atctttttta 1140
 aatca 1145

<210> 204
 <211> 4909
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (2488)..(2488)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (2493)..(2493)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (2512)..(2512)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (2523)..(2523)
 <223> n equals a,t,g, or c

<400> 204
 gcgtccgggtg gtggcggcgg cgcaaggggtg agggcggccc cagaacccca ggtaggtaga 60
 gcaagaagat ggtgtttctg ccctcaaat ggtcccttgc aaccatgtca tttctacttt 120
 cctcactggt ggctctctta actgtgtcca ctccctcatg gtgtcagagc actgaagcat 180
 ctccaaaacg tagtgatggg acaccatttc cttggaataa aatacgactt cctgagtacg 240
 tcatacccagt tcattatgat ctcttgatcc atgcaaacct taccacgctg accttctggg 300
 gaaccacgaa agtagaaatc acagccagtc agcccaccag caccatcatc ctgcatagtc 360
 accacctgca gatattctagg gccaccctca ggaagggagc tggagagagg ctatcgggaag 420

aacccttgca	ggctcctggaa	cacccccctc	aggagcaaat	tgcactgctg	gctcccagagc	480
ccctccttgt	cgggctcccc	tacacagtgt	tcattcacta	tgctggcaat	ctttcggaga	540
ctttccacgg	attttacaaa	agcacctaca	gaaccaagga	aggggaactg	aggatactag	600
catcaacaca	atttgaaccc	actgcagcta	gaatggcctt	tccctgcttt	gatgaacctg	660
ccttcaaagc	aagttttctca	atcaaaatta	gaagagagcc	aaggcaccta	gccatctcca	720
atatgccatt	ggtgaaatct	gtgactgttg	ctgaaggact	catagaagac	cattttgatg	780
tcactgtgaa	gatgagcacc	tatctggtgg	ccttcatcat	ttcagatttt	gagtctgtca	840
gcaagataac	caagagtggg	gtcaaggttt	ctgtttatgc	tgtgccagac	aagatgaatc	900
aagcagatta	tgcactggat	gctgcggtga	ctcttctaga	attttatgag	gattattttca	960
gcataccgta	tccccctacc	aaacaagatc	ttgctgctat	tcccgaactt	cagtctggtg	1020
ctatggaaaa	ctggggactg	acaacatata	gagaatctgc	tctgtttgtt	gatgcagaaa	1080
agtcttctgc	atcaagtaag	cttggcatca	caatgactgt	ggccccatga	ctggcccacc	1140
agtgctttgg	ggacctgggtc	actatggaat	ggtggaatga	tctttggcta	aatgaaggat	1200
ttgccaaatt	tatggagttt	gtgtctgtca	gtgtgaccca	tcctgaactg	aaagttggag	1260
attattttct	tggcaaatgt	tttgacgcaa	tggaggtaga	tgctttaaat	tcctcacacc	1320
ctgtgtctac	acctgtggaa	aatcctgctc	agatccggga	gatgtttgat	gatgtttctt	1380
atgataaggg	agcttgtatt	ctgaaatgct	taaggggagta	tcttagcgct	gacgcattta	1440
aaagtggat	tgtacagtat	ctccagaagc	atagctataa	aaatacaaaa	aacgaggacc	1500
tgtgggatag	tatggcaagt	atttggccta	cagatgggtg	aaaagggatg	gatggctttt	1560
gctctagaag	tcaacattca	tcttcatcct	cacattggca	tcaggaaggg	gtggatgtga	1620
aaacatgat	gaacacttgg	acactgcaga	ggggttttcc	cctaataacc	atcacagtga	1680
gggggaggaa	tgtacacatg	aagcaagagc	actacatgaa	gggctctgac	ggcgccccgg	1740
acactgggta	cctgtggcat	gttccattga	cattcatcac	cagcaaatcc	gacatggtcc	1800
atcgattttt	gctaaaaaca	aaaacagatg	tgctcatcct	cccagaagag	gtggaatgga	1860
tcaaatttaa	tgtgggcatg	aatggctatt	acattgtgca	ttacgaggat	gatggatggg	1920
actctttgac	tggcctttta	aaaggaacac	acacagcagt	cagcagtaat	gacgggcaa	1980
gtctcattaa	caatgcattt	cagctcgta	gcattgggaa	gctgtccatt	gaaaaggcct	2040
tggattttat	cctgtacttg	aaacatgaaa	ctgaaattat	gcccgtgttt	caaggtttga	2100
atgagctgat	tcctatgtat	aagttaatgg	agaaaagaga	tatgaatgaa	gtggaaactc	2160
aattcaaggc	cttcctcatc	aggctgctaa	gggacctcat	tgataagcag	acatggacag	2220
acgagggctc	agtctcagag	cgaatgctgc	ggagtgaact	actactcctc	gcctgtgtgc	2280
acaactatca	gccgtgcgta	cagagggcag	aaggctattt	cagaaagtgg	aaggaaacca	2340
atggaaaactt	gagccttgct	gtcgacgtga	ccttggcagt	gtttgctgtg	ggggcccaga	2400
gcacagaagg	ctgggatttt	ctttatagta	aatatcagtt	ttctttgtcc	agtactgaga	2460
aaagccaaat	tgaattttgcc	ctctgcanac	ccnaaaataa	ggaaaagctt	cnatggctac	2520
tanatgaaag	ctttaaggga	gataaaataa	aaactcagga	gtttccacaa	attcttacac	2580
tcattggcag	gaaccacagta	ggatacccac	tggcctggga	atttctgagg	aaaaactgga	2640
acaaacttgt	acaaaagtgt	gaacttggct	catcttccat	agcccacatg	gtaatgggta	2700
caacaaatca	atttccaca	agaacacggc	ttgaaagggt	aaaaggattc	ttcagctctt	2760
tgaagaaaaa	gtgttctcag	ctccgttggt	tccaacagac	aattgaaacc	attgaagaaa	2820
acatcggttg	gatggataag	aattttgata	aaatcagagt	gtggctgcaa	agtgaaaagc	2880
ttgaacgtat	gtaaaaattc	ctcccttgcc	aggttcctgt	tatctcta	caccaacatt	2940
ttgttgagt	tattttcaaa	ctagagatgg	ctgttttggc	tccaactgga	gatacttttt	3000
tcccttcaac	tcattttttg	actatccctg	tgaagaagaat	agctgttagt	ttttcatgaa	3060
tgggctatcg	ctaccatgtg	ttttgttcat	cacaggtgtt	gccctgcaac	gtaaacccaa	3120
gtgttggtgt	ccctgccaca	gaagaataaa	gtaccctatt	cttctcattt	tatagtttat	3180
gcttaagcac	cgtgttccaa	aaccctgtac	cccatgttta	tcattcataa	actgtttcat	3240
cagtctcctc	gaaagactct	gaatagtcga	ctactgaaca	atgaacacct	ggatctgaga	3300
ctaagccgga	cgatgactgg	gttaaagctc	tcccggctca	cccctccaga	cccgtgccc	3360
atccctcttc	cttgctccat	gcccaggggc	tgacttgtaa	aggccaagtc	atcaagcttt	3420
cttgcccttt	ggatgttgg	cagtggggag	ccggagagct	ggagctgggg	tcggaggagg	3480
tagtaggtgg	aggtgttctt	ccctgattcc	cttgcgggat	gcctcgggct	ggcctcccc	3540
gaggttctta	gtcccgagag	gggaccctct	tttccacaca	gccttctcca	cctctggatt	3600
ttggtaactg	ctccctcctc	atcccttcag	gattagtggc	ctcagtggga	gtctggcttt	3660
tactagtcct	ggcggacttg	tggtttctac	ataatgtgct	cgcacttttg	caaaaaatct	3720
ttttatagaa	ccctcctcag	ataattctga	gtgtctgtca	tctatttccc	tgactggtac	3780
agtatctctt	ctgaaaaagc	agagtgcatt	caagtctgta	ggaaaaccct	tttcttaggg	3840
aggtgatttt	ttttctctct	ctgcttctta	tttggcctac	tttacaattt	ctaactaact	3900
agttattggc	atttactgac	agtaaatatt	tgcagtcacc	aataaatgat	agtacattgt	3960
gaaacaaaaa	atttgcctcat	attagcaaat	aggacattct	ttggctttga	agtccttctt	4020
ttgtgaagac	ttcacacacg	gttgcttcag	cacacagttg	ctgctcaggt	tttatgtata	4080

gatgataata	atagaaagca	cagtttacta	acatggtaaa	ccaacggagt	tcaagtcaag	4140
tcagttaata	ccctaagaat	tagattttat	ttcttattct	gaaaacttgc	tacacagggg	4200
cttatctaac	ccatagtgtg	ctctgttgct	gacttgattc	aagttgcagc	gtgttttgcg	4260
ctgactctaa	ggtgcggaaa	tcctcacacc	tggcaaagga	gaattcaaac	tgaacttttt	4320
gaatataagg	caaaaacttc	aagataaggg	aatatgattg	atgattggta	cgaaaaatgt	4380
caaaaatgtg	ttccccta	acacgacaaa	atagagtgc	ttctggacat	aaatctgcc	4440
tttattaaac	cattcactac	aacaaataaa	taggtataaa	agtgggaattg	gaatttttat	4500
acttatttgt	tgtagtgaat	ggtttaataa	aaatagaaat	cactggtaat	ttccacccca	4560
aactaaacta	tttcccttct	tttaaaaaaa	tacacaacca	agattttaat	gtaaaaatatt	4620
ttgctttaat	tgtattttat	gccttgatta	atgaaacatg	gaaatattga	ttttcagttt	4680
tggtcacctg	aggaacctat	ctttgtttgc	ttttggaaaa	gcccattttc	taaacagata	4740
caatatagct	acaacaatgt	gcagaaacct	ttttgataat	aaaaaattgt	tctttgcctc	4800
taaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	4860
aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa		4909

<210> 205

<211> 2921

<212> DNA

<213> Homo sapiens

<400> 205

ccacgcgtcc	ggattttctga	ggttctgcaa	acaggccacc	ctgcagttct	gtgtggtgaa	60
gccactcatg	gcgggtcagca	ctgtggctct	ccaggccttc	ggcaagtacc	gggatgggga	120
ctttgacgtc	accagtggct	acctctacgt	gaccatcatc	tacaacatct	ccgtcagcct	180
ggccctctac	gccctcttcc	tcttctactt	cgccacccgg	gagctgctca	gcccctacag	240
ccccgtcctc	aagttcttca	tggccaagtc	cgtaactctt	ctttccttct	ggcaaggcat	300
gctcctggcc	atcctggaga	agtgtggggc	catcccaaaa	atccactcgg	ccgcgtgtc	360
ggtgggcgag	ggcaccgtgg	ctgccggcta	ccatgacttc	atcatctgtg	tggagatgtt	420
ctttgcagcc	ctggccctgc	ggcaccctt	cacctacaac	gtctatgctg	acaagaggct	480
ggacgcacaa	ggccgctgtg	cccccatgaa	gagcatctcc	agcagcctca	aggagaccat	540
gaaccgcgac	gacatcgtgc	aggacgccat	ccacaacttc	tcacctgect	accagcagta	600
cacgcagcat	tccaccctgg	agcctgggcc	cactggcgct	ggtggcgccc	acggcctctc	660
ccgtctccac	agcctcagtg	gcgcccgcga	caacgagaag	actctcctgc	tcagctctga	720
tgatgaattc	taggtgctgg	ctgcagtgcc	ggaagtgtctg	gcgccatagc	cacggtcagg	780
ctgtgcccga	cctccagcct	caccaccagg	ccaggaggca	gctggcacag	tgtctacgcc	840
gcctttatatt	attggaccag	aaacactcac	atgtcgcttc	cagagggaacg	ggggacagcc	900
aggctcgccc	atgggccttc	aggaatatatt	atacatggcc	cagcctgcac	tggccgggcg	960
agggcagagg	acactgggag	caaggcttat	gcccctgtctg	ccgctcctgt	gctgggggca	1020
tgtggggacc	agccgcaccc	aggccccaat	gcttgtgtgt	ggaccagcgg	ctgcagcctt	1080
ctagcccttc	ctccccgcga	gactctcagg	ctgaggctcg	caagccgtgg	ctccccaca	1140
caccgtgcaa	tacctgtct	gacctgggct	cttccgcct	gcctcccttc	cctgtccacc	1200
tttgtccagt	gctagattca	cctcaccctg	ggcaggagt	gggatgtggg	cgctctgtgg	1260
tcctcccttc	ctgaccacag	cctctgtggc	atgctgcaag	gatcagagcc	agacaccagg	1320
agtacagggc	cccaccacag	aagggcattc	agggcccttg	ggcaccgctt	ctgttgaagc	1380
aggggcttct	gggcccctgg	gtatccccc	ctgtctgggc	cacacctctg	cctgcctcat	1440
gccccttccc	ctggcctacc	aaggacagcc	cacagccgc	actgccggct	cacttgggtc	1500
cttctctgat	agctttgggc	agagcccttg	cttctctggc	gcttcagggc	tcaggggctc	1560
ccagccctcc	ttcccaggct	gatgtgggt	cctctctctc	tttggggctt	ctccctccc	1620
tttcaggggg	aaggtctgag	tctccacgtt	tcagaccagc	ttctggggga	aggcagtcctg	1680
gcaggagagc	cgggaggggg	ggccacacag	tggggagctg	ggaggtgggg	ggaatggtcc	1740
cagactcctc	tcggggcccc	tatccacaca	ggccctgggtg	ttctacccca	tctggccct	1800
ggcccatctc	tctgtgcct	tagtcacata	tgaagcgcc	cctccctggc	tccccatctg	1860
tcccacacgc	tccttggggc	tcttagttca	gctgtggca	ctcgcaggat	cctgcagtg	1920
tggggccaga	gcccttggac	aggcctcagg	agtggtcagg	accaccaagc	ccctcctctc	1980
cccctccaca	cctctagacc	tggggcctcc	ggaaccccca	gcaggctggg	cttatactag	2040
ctcctgactt	aggaagagcc	tctgttcaca	acacgtgtcc	ctacaggcaa	agtgtcctgg	2100
catttaaaac	ccagattatc	cctgggtttg	ggtgcagtc	acctggagaa	gctggtagg	2160
taaggagag	ggaccctgcc	ggtgttcacg	gggattcttt	cttttgggtc	ttcctggaat	2220
gaacagggtc	cctccctgcc	acctgtgagg	agagttgggg	ccagccgctc	ttcctggcct	2280
ccttctcttc	ctcgtggcag	aggcctgcac	gtgggtgcca	gaggccagct	ctccccctcc	2340
atcttggggg	ggcggagcag	ttgggcccga	gctgcccggg	agggtgggtg	cagacacagg	2400

ctgaggacca	gccctggccc	tgccccgcca	tctgctttca	ccaagctgtc	tctccaccgt	2460
ggcttccctt	ctccctccag	gccaaagtgc	tgctgattcc	cactcccttg	gttttcgcct	2520
gcccagcggt	gctgtttgcg	tggagggtgg	ggggagctca	gtggcagga	atcagcggtc	2580
cgtggggtcg	tggggacggg	aacatgtgcc	cgaccgctcc	atccccctct	cctccttagg	2640
atgcataacc	taccttgctt	tttttttttt	aattttcttt	ccaggtagag	tagctctttg	2700
tacataaaga	atacttgaaa	aatttaattgt	atgatgtatg	agaagacaga	gtctcctagt	2760
tttgatatctt	gttgatgac	tgccatgagt	tccaccagaa	agccactcta	ttttggtctc	2820
tgtgacattt	taaatgcgtg	acagaagtga	gcaaataaag	tgaggaagaa	atctaaaaaa	2880
aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaag	g		2921

<210> 206

<211> 1259

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (4)..(4)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (18)..(18)

<223> n equals a,t,g, or c

<400> 206

gggntacaaa	agctgganct	ccaccgcggt	ggcggccgct	ctagaactag	tggatccccc	60
gggctgcagg	aattcggcac	gagtcacac	agggcctggg	gttctacccc	atctggcccc	120
tggeccatct	cttctgtgcc	ttagtcacat	atgaaagcgc	ccctccctgg	ctccccatct	180
gtcccacacg	ctccctgggg	ctcttagttc	agctgctggc	actcgcagga	tcctgcagtg	240
ctggggccag	agcccttgga	caggcctcag	gagtggctcag	gaccaccaag	ccccctctct	300
ccccctccac	acctctagac	ctggggcctc	cggaaacccc	agcaggctgg	gcttatacta	360
gctcctgact	taggaagagc	ctcgtgtcac	aacacgtgtc	cctacaggca	aagtgtcctg	420
gcatttaaaa	cccagattat	ccctgggttt	gggctgcagt	cacctggaga	agctggtagg	480
gtaagggaga	gggacctgc	cgggtttcac	tggggattct	ttcttttggg	ccttcctgga	540
atgaacaggt	tccctccctg	ccacctgtga	ggagagttgg	ggcccagccg	tcttcctggc	600
ctccttcctt	tcctcgtggc	agaggcctgc	atgtgggtgc	cagaggccag	ctctccccct	660
ccatcttggg	ggggcggagc	agttgggccc	aagctgcccc	ggaggggtggg	tgcagacaca	720
ggctgaggac	cagccctggc	cctgccccgc	cttctgcttt	caccaagctg	tctctccacc	780
gtggcctccc	ttctccctcc	aggccaaagt	gctgctgatt	cccactccct	tggttttcgc	840
ctgccagcgc	ttgtgtttg	cgtggagggt	ggggggagct	cagtggcagg	gaatcagcgg	900
tccgtggggt	cgtggggacg	ggaacatgtg	cccgaccgct	ccatcccctc	ctcctcctta	960
ggatgcataa	cctaccttgt	cttttttttt	ttaaattttc	tttccaggta	gagtagctct	1020
ttgtacataa	agaatacttg	aaaaattaat	tgtatgatgt	atgagaagac	agagtctcct	1080
agttttgtat	cttgttgtat	gactgccatg	agttccacca	gaaagccact	ctattttggg	1140
ctctgtgaca	ttttaaatgc	gtgacagaag	tgagcaataa	aagtgaggaa	gaaatctata	1200
tatgagataa	tatagattgt	attgaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaactccga	1259

<210> 207

<211> 1314

<212> DNA

<213> Homo sapiens

<400> 207

atgcggcagc	tcttctatga	ccctgacgag	tgcgggctga	tgaagaaggg	gggcttgtag	60
ttcagtgact	tctggaataa	gctggacgtc	ggcgcaatct	tgctcttcgt	ggcagggctg	120
acctgcaggc	tcaccccggc	gacgtgttac	cccgggcgcg	tcactcctct	tctggacttc	180
atcctgttct	gcctccggct	catgcacatt	ttaccatca	gtaagacgct	ggggcccaag	240
atcatcattg	tgaagcggat	gatgaaggac	gtcttcttct	tcctcttctc	gctggctgtg	300
tgggtggtgt	ccttcggggg	ggccaagcag	gccatcctca	tccacaacga	gcgcggggtg	360
gactggctgt	tccgagggcc	gtctaccact	cctacctcac	catcttcggg	cagatcccgg	420

```

gctacatcga cggtgtgaac ttcaaccggg agcactgcag cccaatggc accgaccctt 480
acaagcctaa gtgccccgag agcgacgcga cgcagcagag ccggccttcc ctgagtggct 540
gacggtcctc ctactctgcc tctacctgct cttcaccaac atcctgctgc tcaacctcct 600
catcgccatg ttcaactaca ccttccagca ggtgcaggag cacacggacc agatttggaa 660
gttccagcgc catgacctga tcgaggagta ccacggccgc ccgcccgtgc cgccccgtt 720
gatcctcttc agccacctgc agctcttcat caagagggtg gtcctgaaga ctccggccaa 780
gaggcacaag cagctcaaga acaagctgga gaagaacgag gaggcggccc tgctatcctg 840
ggagatctac ctgaaggaga actacctcca gaaccgacag ttccagcaaa agcagcggcc 900
cgaggagaag atcgaggaca tcagcaataa gggtgacgcc atgggtggacc tgctggacct 960
ggaccactg aagaggtcgg gctccatgga gcagaggttg gcctccctgg aggagcaggt 1020
ggcccagaca gcccgagccc tgcactggat cgtgaggacg ctgcccggca gcggcttcag 1080
ctcgaggcgc gacgtcccca ctctggcctc ccagaaggcc gcggaggagc cggatgctga 1140
gccgggaggc aggaagaaga cggaggagcc gggcgacagc taccacgtga atgcccggca 1200
cctcctctac cccaactgcc ctgtcacgcg cttccccgtg cccaacgaga aggtgccctg 1260
ggagacggag ttcctgatct atgaccacc cttttacacg gcagagagga agga 1314

```

<210> 208

<211> 468

<212> DNA

<213> Homo sapiens

<400> 208

```

gtgagaagat aatcctgaga ggctgcatcc tgagaaatac cagctgggtg tttggaatgg 60
ttatttttgc aggtcctgac actaaactaa tgcagaatag tggtaagaca aagtttaaaa 120
ggacaagcat tgatagattg atgaatactc tagtactatg gatttttggg tttctgatat 180
gcttgggaat tattcttgca ataggaaatt caatctggga gagtcaaact ggggaccaat 240
tcagaacttt cctcttttgg aatgaaggag agaagagctc tgtgttctcc ggattcttaa 300
cattctggtc atatattatt attctcaata cagttgtacc catttcctta tatgtgagtg 360
tggaagtaat tcgtctagga cacagttatt ttataaactg ggaccggaag atgtattaty 420
ctcgaagaagc aatacctgca gtggctcgaa cgaccacgct caatgagg 468

```

<210> 209

<211> 181

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (178)..(178)

<223> n equals a,t,g, or c

<400> 209

```

ggtcagtgtg cagatagcct tggataccag ktactggact ttcattaatc acgtcttcat 60
ctgggggagc attgccattt atttctccat tttattttaca atgcacagta atggcatctt 120
tggcatcttc ccaaaccagt ttccatttgt tggtaatgca cgacattccc tgaccanana 180
g 181

```

<210> 210

<211> 612

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (47)..(47)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (534)..(534)

<223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (537)..(537)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (563)..(563)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (565)..(565)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (591)..(591)
 <223> n equals a,t,g, or c

<400> 210
 cagtctgggc ttaagaaacc accagaagaa cccaaccag aaatgcncaa gtgtaaatac 60
 aaaaattctt atagaagaaa tagcataaga atttgcacat tcggaaataa gaccaccttc 120
 catgaacaag gagaagcctt tggagatatc taaactgtgc aaatgaatag tcgctggcta 180
 agactgcttg caatccttcc tggccgctga tgccaacacc aatgtgagca cttttaatca 240
 tgctgacatc attggctcca tcwccaatgg ccaaagtaac agcatttctg tactttctca 300
 ccagctctac cacttgggct ttctggagtg gagtgaccct gcagcaaatt acagtcttac 360
 acatgcaagc aagttctagg agatcattct tgacatcact ttctagggca tgagccaaac 420
 tgtggccatt tatgattaag gcataatctc ctgttatggc ttcttctaca atagaatcca 480
 actccagctg ctgctttttt tcacaaacta catggccatt ggaaaaattt ctgnttngtc 540
 caaacaattt ttgttttgaa atnangagtt cttctctcac ttccacagca nttattccct 600
 gctataggga gg 612

<210> 211
 <211> 1024
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (29)..(29)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (986)..(986)
 <223> n equals a,t,g, or c

<400> 211
 tgctttcctg agttcttctc tcacttcnc agcattattc cctgctatcc caaacmcatc 60
 attcatgtcg tcagtcagca tgttgaggc ataaccgatg ttgatgscag tttcttgttt 120
 gtctcctggt aggaccaga tcttaattatt ggctagtgat aaacttgtaa ctgtttcaat 180
 aacaccctcc tgtaacttat cttctacagc agtggcacct agtagcatca aatctctttc 240
 aatttcttca tatagcccag ctattcggtc atccctctct tctgtggcaa cattcgcatc 300
 ttcaagcatc ttatgccact ctttaaagta cttgtcatcc aggtctctgt atgcgatggc 360
 caaggtccga aggccttccc ctgcaaattc actgaggtgg tctgacgtca aagacaaaag 420
 gacttcattg gaaggatsaa gtttctcaaa cagaatagta tctgctcctt tggaataaag 480
 ctttatctgt ccttctgggt ttcgartat gacagacatc ctttttctgg tgttggtgaa 540
 atccaaaaag gcaagtaatt gataagtaac tagtggtccc aattcttcta ttgttatggc 600
 ctctgggggc cgggatttaa aratgaaccc aaaatttcta gcggcagtc ctagagcccc 660

```

ttcatcaggt gactgaactt ggtaaactcag ctctcctgcg ctattctctt ctgacattac 720
agtgtggcag agagcaagta acctaaggaa ttcatagaact ttgggatcac ccattttaat 780
ggattccatc agattgtggg caaagaactg aaattctcta tccgcttgag atttgactga 840
gaaatccaca ggctcttttt cctgagttat ttctgtcttc tgatccaggt catcatgtac 900
ttcaccatag attctcccat taatggaaca tcttttaaaag gtcatagtgt tttgagttag 960
ggtagccgtt ttgtcggaga aaatgnactc aatctgcccc agttcttcat tgagcgtggg 1020
cgtt 1024

```

<210> 212

<211> 366

<212> DNA

<213> Homo sapiens

<400> 212

```

gacgcgtggg agctcattat ccatcaaact cactcargtg wcacytgagt gagtttgatg 60
gataatgagc taatgtgata tctatagggt acaatttttt aaaacaaaaa ttttcaagtc 120
tgggataatc tttcctaaat gggatcaaat gaaataatat gtgtaaaaga gtcaaatgca 180
gtcctttacc atagtaactg cctatggacg ttgtctttcc cttacatgcc tgcctacact 240
taaccagatg ttggttttca agtctaattt gtcattagtt tcaccacatt kgctcacttt 300
tkgtaacatt tttgcaagat ttgaaaactt tcagtaaatg ttttggcact attggtaaaa 360
aaaaaa 366

```

<210> 213

<211> 519

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (371)..(371)

<223> n equals a,t,g, or c

<400> 213

```

cctggttagg gtcctacagg gaaataaaat tataaccgtg gaggtacatt tctctaccag 60
aaagcaaaaa taaagcatca tgtcttaatg gttttctaca aatcaacttc taattctaca 120
gagtccttaa tctgggtccct attaaattct tgggtcagaca aagttacatt tcccaagaga 180
gtcaggtgac acttgagtga gtttgatgga taatgagcta atgtgatatc tatagggtcac 240
aattttttta aacaaaaatt ttcaagtctg ggataatctt tcctaaatgg gatcaaatga 300
aataatatgt gtaaaagagt caaatgcagt cctttaccat agtaactgcc tatggacgtt 360
gtctttccct nacatgcctg cctacactta accagatgtt ggttttcaat gtctaatttg 420
tcattagttt caccacattt gctcactttt tgtaacattt ttgcaagatt tgaaaacttt 480
cagtaaatgt tttggcacta ttggtaaaaa aaaaaaaaaa 519

```

<210> 214

<211> 2042

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (2001)..(2001)

<223> n equals a,t,g, or c

<400> 214

```

ggtcagcttt catctcgctc tatctttgtt caggcaaact tctctagttc tgttttaata 60
ggcatatatt ttaggtctgt tttttgaaat cctctttttt acattgttta aagataatgc 120
cttggtctaa aagcctgctt cacttttccc tgtttttagt tgttttctcc acattggcag 180
taaagagcct tggcgtccca gtagcagcag gttctctttt ttgtattgtg gatgttttgc 240
atcttcatact gttgtgaaga gtggctttga tcatacatgt tgttggtata tttgccyttt 300
tgctgggggt gtgagaagaa ccagagatga gcagaggtac acccagtaga cttcccagcc 360
tgtagagcct cccgggaaga gcttccgtgt tcaggtgctt ggggccccwc cctaggagcc 420

```

tgwctcwcag	tcagagcwg	gtccccggctt	gygttcagga	ttttgaaaca	tttgtawggt	480
gattttgttg	tttctacacc	tttctcctca	tctttttttt	tttgtagtta	atcgttacta	540
ataacagaaa	agacatTTTT	ggcatggtaa	ttggcacaaa	gtgaataatt	gttgaataga	600
tgacttttga	ggctttcaaa	attcgagtgt	ccataaaatc	catccagagc	cacctgggtc	660
ctttttttga	accacttaac	gtaattctgg	aaaaccttga	ctgtgggtct	taagtttggt	720
ggattgctgc	ttctcactgg	ctgacctttg	gaggtcgcat	atttcaggat	gtgattccac	780
ttaggctcca	tttcacctga	cactgcaatt	ctgtgccttc	agagggattt	gttattgcga	840
atgatgtgga	caacaagcgc	tgctacctgc	tcgtccatca	agccaagagg	ctgagcagcc	900
cctgcatcat	ggtgggtcaac	catgatgcct	ccagcatacc	caggctccag	atagatgtgg	960
acggcaggaa	agagatcctc	ttctatgatc	gaattttatg	tgatgtccct	tgcagtggag	1020
acggcactat	gagaaaaaac	attgatgttt	ggaaaaagtg	gaccacctta	aatagcttgc	1080
agcttacttg	cttacagctg	cggattgcaa	cacgcggggc	tgaacagctg	gctgaagggtg	1140
gaaggatggt	gtattccacg	tgttcactaa	accctattga	ggatgaagca	gtcatagcat	1200
ctttactgga	aaaaagtga	ggtgctttgg	agcttgctga	tgtgtcta	gaactgccag	1260
ggctgaagtg	gatgcctgga	atcacacagt	ggaaggta	gacgaaagat	gggcagtgggt	1320
ttacagactg	ggacgctggt	cctcacagca	gacacaccca	gatccgacct	accatgttcc	1380
ctccgaagga	cccagaaaag	ctgcaggcca	tgcacctgga	gcgatgcctt	aggatattac	1440
cccacatcat	gaatactgga	gggttttttg	tggcagttat	ggtgaaaaaa	tcttcaatgc	1500
cgtgggaataa	acgtcagcca	aagcttcagg	gtaaatctgc	agagaccaga	gaaagcacac	1560
agctgagccc	tgcagatctc	acagaaggga	aacccacaga	tccctctaag	ctggaaagtc	1620
cgtcattcac	aggaactggt	gacacagaaa	tagctcatgc	aactgaggat	ttagagaata	1680
atggcagtaa	gaaagatggc	gtgtgtggtc	ctcctccatc	aaagaaaatg	aagttatttg	1740
gatttaaaga	agatccattt	gtattttatc	ctgaagatga	cccattattt	ccacctattg	1800
agtaaggatt	cagccttttt	aattattcat	ttaaagaaat	ttactataga	gtatcaaagt	1860
tacaactgat	cacatgtaac	cattgttttg	tatgtagtgc	tgtctagctt	tttttttttt	1920
ttaacctttt	taactgcata	ttagagcagg	atgaaacttt	agaggttact	caatctttta	1980
atttaaggag	aaagtaaaca	nttactttgt	gaacatgata	gataaaaaaa	aactggaccg	2040
gg						2042

<210> 215

<211> 308

<212> DNA

<213> Homo sapiens

<400> 215

ggaggcagga	ccttgtecta	ttcattaatc	ttgcccctca	acagttattt	tcagaggggc	60
aagaagtgtt	tcagggttct	tggcccttgt	ttgaccagtc	gtcctaacc	tcrtgtcttg	120
ggtcattgtt	gtttrtaact	gggtttacct	tttggaaagt	catggggtag	cctttttgcaa	180
aagtattggg	ccctmtcctt	ggaaactgca	cacacacat	gcagcttaca	attcaggag	240
ttcacaggtc	tacagaatcc	tgggaaactc	tccatgtccg	gttctaatac	attgtagctt	300
cagtggga						308

<210> 216

<211> 1568

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1550)..(1550)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1564)..(1564)

<223> n equals a,t,g, or c

<400> 216

ctcatcagcc	ctatgaggta	gggaggtagg	tattattatc	acccttggtta	gtttttttgt	60
tttgttttgt	tttccagatg	agagaatcat	tgctcacaga	agtgaagtaa	ctttttccaag	120
gtcatacaat	cagtaagtgg	caggcaagga	ctgaaatcca	agttgttacc	ctccaaagtc	180

```

cctgctctga gaactggagg aattctttat caaatctaaa atcctctttt agscctgtct 240
gctttaatat tccggctcttt attgatcctt ctctctctta aamcttcagc tgtcagtata 300
aaaatcaagg aatttagcmc ttgttattgt gtgamcagct tcttgtctct cctgtactgt 360
aagtgggtct agggattttt attctttaaa tatccccctg tactcagtag atctttggga 420
gamcaagctc ataggcttct aataattctt tctttgactg ccagctgaat tagacagaag 480
gtaagtctct ctgccgtgtc gtgcctaacc ccactcttat ttctgtgtgt gttagagaac 540
agtcttttct tggctgggac aaatactaca gcctgctcaa ctagctaata tgtattgagt 600
tcttartatg ttccaaggac tgctctaagt attttatata tattaactca ctgaatctta 660
aataccctat gagctaagtc ctatttttat ccccatttta caaaagagga aactgaatgt 720
accagtgcat cagtatttga ctgagtaaat gaatgactgc tttgctgatg gatagtatta 780
ttagcaacaa cctacaaat atgatgttat gtttgcata tgacagtag ctttatgtac 840
cttatgtcat tgtactcat gattagcaaa taggcacgaa catccctatt ttatagaaga 900
ggaamccatg gctctaagag ggtgagtgtat tctcaacagt cacatgccat ctgtatcctt 960
cagtaaacaa ggtatttggg ccattccagg atcgggggca agagagatgg gagggcctcg 1020
gtgagaaaca ctcatattca caaaaggtag tagatagata gacagataaa taaataaata 1080
gagataaaaag ctagtaatag cagagatttg atgggaattc agatctttga ttctagtcc 1140
agtgtctttt cttttatgta aggtgatggg aagcaagtct taggtccaga tctggcagct 1200
gctttgattt aggatcttaa gccagaagca gcagcgccct aaacaaaaag catcatttta 1260
acttctctgc atttctcaca ttctcaaca tgaccatgcc ctactttcat aattaaaaac 1320
aaacaaataa acagaggggg caaaatgcat ccttctgagt gggctggggc ttgtagaggg 1380
attcttgggt ttgctctggg atgtctttgg gccctgcac ttgtgggcac tctgatttat 1440
ccccacaggc cacctggccc accttatggg ctgaggaggg cttgatgggc ggaggsaagc 1500
agagctgagg agctggggag gagctggaaa ggactgctag aaggttccan tgaagctaca 1560
atgnntag 1568

```

```

<210> 217
<211> 865
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (13)..(13)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (20)..(20)
<223> n equals a,t,g, or c

```

```

<400> 217
accgcagcct gcngggctcn agcattccty tsgcytcagc ctcttgakta gctgggaccm 60
cagytccact aattttgaag ttttttkggt agacatgaag tctccctgtg ttgcccgggc 120
tggctctcaa ctcctgacct caagcagtc tctgtcttg gcctctggaa atgctgggat 180
tacaggcgtg agccactgtg ctggcctctt ttttcttttt cttttttttt aagggttttta 240
tttgttaaat gggaagtctg tgccatcaac tgagcattgt attttctcct tagtaagagc 300
ctgggtgggc cactgggaga gaactataca ttaaatgtaa gtagcctctg ggtagagagc 360
ccctggctgg tttcctttcc tttctctcct tttctctact ttggtgtctg gaggcatttc 420
ccagactcca gtttcttacc accctcacgg attttgcata tgtattatca cctcctttat 480
cattcccaaa attgacttta tggagactca ttaaaagaaa gaatcatcgg ccgggagcgt 540
kgctcacgcc acgaaggcgg gcgaatcacc tgaggtgcgg agttcgtgac cagcctgacc 600
aaaacagaga aaccccatct ctactaaaca atacaaaatt agctgggcgt ggtggtgcac 660
gcctgtaatc ccagctactg gggaggctgg gacgggagaa tcacttgaac ccgggaggca 720
gaggttgtag tgaccaaaga tcgactatt gcactccagc ctgggcaaca agagcaaaac 780
tctatctcaa aaaaaaaaaa aaaaaaaaaa aaaagggcgg ccgctctaga ggatccctcg 840
aggggcccaa gcttaggcgt gcatg 865

```

```

<210> 218
<211> 1687
<212> DNA
<213> Homo sapiens

```

<220>
 <221> misc_feature
 <222> (1568)..(1568)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (1652)..(1652)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (1654)..(1654)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (1660)..(1661)
 <223> n equals a,t,g, or c

<400> 218
 ccacgcgtcc gggcagtggt gtgagggcac acaagcagtt caggggtccca gcaggaagtg 60
 gggctgcagg gccgggtgtg gtcctggggc tggccatcag gcagcctagc aggttgttct 120
 gggcatggag ggggccttgt gtggctgagg gcatgcccag ggctccctgg aggatcccgc 180
 tctgtgccct gccaccctg tgcttgggga gccctctgcc ctacacagccc acccacccca 240
 ttttctatga ccacagagct ccgacctgga agatggctca cccaggaggt cccaggagct 300
 ctactcccc caggggacct ggaggacacc cagctctcag acaaaggctg ccttgccggc 360
 ggggggagcc cgaacacagcc ctttgcagct ctgcaccagg agcaggtttt gcggaacccc 420
 catgtaaggc ttccccgggg tgggtcctc ccagccgtgg gcctcagggt gaccgatcac 480
 agggagagtg gtcctctgcc ctgggcaccc cctgcggtgg ccccgacgac agctgaggag 540
 tgaccacaag gtctctgccc acagtgtctg ggggtgcggtg tctgggctgc gaagtggatc 600
 cccctccttt cttgggcact gcagcagctt ggggggcttt ttggacgtgg atgtgcctgg 660
 tctgtgttcc cggaggccct ttacagtgga tgaggaggtg aacacaggga gtcctgagag 720
 caagcaccac ctcggtcttt ggtgtagaaa caatggcccc gaccccaggc cggagccgtg 780
 gcttggcctc ctgggtgtgt cttggcatct gaaatgcagg ctaccacacac cggctcacct 840
 ccaggggtac aggcaggtcc cacagggaga gcttggcgct gagctgaggc tgtctgggct 900
 cctcgctcc caaccagtct gcagttacag gggccagtgg atgggcgggt gagaaggacg 960
 ggttccctca ggggagccgg ccggagcccg agccttcccc cttctccagg acgcaggcct 1020
 gagcagcggg gagccgcccg agaaggagcg gcggcgccct aaagagagtt ttgagaacta 1080
 ccgcaggaag cgcgccctca ggaagatgca gaaaggatgg cggcaggggt gaggaggacc 1140
 gggagaacac cacgggcagc gacaacaccg acactgaggg ctccctagccg cagcagccgc 1200
 aggccccgac cagggcacac ccaccggccc ggcctcctgc caccgggggg tgccgacgcc 1260
 ctggggcgca gacttccccg agccgtcgct gacttggcct ggaacgagga atctggtgcc 1320
 ctgaaaggcc cagccggact gccgggcatt ggggcggtt gttaagcggc actcattttg 1380
 cggaggccat gcgggtgctc accaccccc tgcacacgcc atctgtgtaa cttcaggatc 1440
 tgttctgttt caccatgtaa cacacaatac atgcatgcat tgtattagtg ttagaaaaca 1500
 cagctgcgta aataaacagc acgggtgacc cgcaaaaaaa aaaaaaaaaa aaaaaaaaaa 1560
 aaaaaanaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1620
 aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa ananaaaaan naaaaaaaaa aaaaaaaaaa 1680
 aaaaaaa 1687

<210> 219
 <211> 570
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (5)..(5)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (16)..(16)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (496)..(496)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (523)..(523)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (531)..(531)
 <223> n equals a,t,g, or c

<400> 219
 ttccngtgcc actatngaatt gtacgcctgc aggtaccggt ccggaattcc cgggtcgacc 60
 cagcgcgtccg ggcagtgagg tgagggcaca caagcagttc aggggtcccag caggaagtgg 120
 ggctgcaggg ccggggtggg tcctgggcct ggccatcagg cagcctagca ggttggtctg 180
 ggcatggagg gggcctggtg tggctgaggg catgcccagg gctccctgga ggatccccgt 240
 ctgtgccctg cccaccctgt gcctggggag cctctgccc tcacagccca cccaccccat 300
 ttwctatgac cacagagctc cgacctggaa gatggctcac ccaggaggtc ccaggagctc 360
 tccctccccc aggcctgga rgacaccag ctctcagaca aargctgcct tgccggcggg 420
 gggagcccg aacagccctt tgcagctctg caccaggagc aggttttgcg gaaccccat 480
 gtaaggcttc ccggngtgg ggtcctccag ccgtgggcct canggtgacc natcacaggg 540
 agagtggctc cctgtcctgg gacccccctg 570

<210> 220
 <211> 1752
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (1099)..(1099)
 <223> n equals a,t,g, or c

<400> 220
 aaggtacgcc tgcaggtacc ggtccggaat tcccggtgcg acccagcgt ccgtccagga 60
 cagagagtgc aaaaactacc cagcacagcc ccctccgccc cctctggagg ctgaagaggg 120
 attccagccc ctgccacca cagacacggg ctgactgggg tgtctgcccc ccttgggggg 180
 gggcagcaca gggcctcagg cctgggtgcc acctggcacc tagaagatgc ctgtgccctg 240
 gttcttgctg tccttgccac tgggccgaag cccagtggtc ctttctctgg agaggcttgt 300
 ggggcctcag gacgtaccc actgctctcc gggcctctcc tgccgcctct gggacagtga 360
 catactctgc ctgcctgggg acatcgtgcc tgcctccggc ccgtgctgg cgcctacga 420
 cctgcagaca gagctggtgc tgagggtgcc gaaggagacc gactgtgacc tctgtctgcg 480
 tgtggmtgtc cacttggccg tgcattggga ctgggaagag cctgaagatg agggaaagt 540
 tggaggagca gctgacttag ggggtggagg gcctaggaat gcctctctcc agggccaaagt 600
 cgtgctctcc ttccaggcct accctactgc ccgctgcgtc ctgctggagg tgcaagtgcc 660
 tgctgccctt gtgcagtttg gtcagtctgt gggctctgtg gtatatgact gcttcgaggc 720
 tgccctaggg agtgaggtag gaatctgggt ctatactcag cccaggtagc agaaggaaat 780
 caaccacaca cagcagctgc ctgactgcag ggggctcgaa gtctggaaca gcatcccgag 840
 ctgctgggcc ctgcctggc tcaacgtgtc agcagatggg gacaacgtgc atctggttct 900
 gaatgtctct gaggagcagc acttcggcct ctccctgtac tggaatcagg tccaggggcc 960
 cccaaaaccc cgggtggcaca aaaacctgac tggaccgcag atcattacct tgaaccacac 1020

```

agacctgggt ccctgcctct gtattcaggt gtggcctctg gaacctgact ccgttagacg 1080
aacatctgcc ccttcaggna ggacccccgc gcacaccaga acctctggca agccgcccga 1140
ctgcgactgc tgaccctgca gagctggctg ctggacgcac cgtgctcgct gcccgagaa 1200
gcggcactgt gctggcgggc tccgggtggg gacctctgcc agccactggt cccaccgctt 1260
tcctgggaga aygtcactgt ggacaagggt ctcgagttcc cattgctgaa aggccaccct 1320
aacctctgtg ttcagggtgaa cagctcggag aagctgcagc tgcaggagtg cttgtgggct 1380
gactccctgg ggctctctaa agacgatgtg ctactgttgg agacacgagg ccccaggac 1440
aacagatccc tctgtgcctt ggaacccagt ggctgtactt cactaccag caaagcctcc 1500
acgagggcag ctgcgccttg agagtactta ctacaagacc tgcagtcagg ccagtgtctg 1560
cagctatggg acgatgactt gggagcgcta tgggcctgcc ccatggacaa atacatccac 1620
aagcgctggg ccctcgtgtg gctggcctgc ctactctttg cctgcgcttt ccctcatcct 1680
ccttctcaaa aaggatcacg cgaaaggggt gctgaggctc ttgaaacagg acgtccgctc 1740
gggggcggcc gc 1752

```

```

<210> 221
<211> 536
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (508)..(508)
<223> n equals a,t,g, or c

```

```

<400> 221
ggtcgaccca cgcgtccgcc cagcgctccg gcttccttaa tgtaatttaa accctggcaa 60
acattcttta gaaaccaaga ggaaagaaag aacaaatata aaaaaagaca tagaatttaa 120
tattgataca atttcacctc taaaatggat ttgaagaaat gcaactttat atcaaaaaat 180
gtcatctgat ttcctttgtt tcttttttaa attatgtaat cagatgattt tatgtttttt 240
tttcagggga gcggaatatt ggtttctttt acttggtgtt ttcagttttc tctgccattc 300
atgtttcttt tttgtgttca gtgtttcaaa tacaatttgt atttaaggat tttaaaatac 360
caaactgtaa ctgagtacag tggatcgttt tctgttagga tgtaaatatt atacaatgaa 420
atctataaag tgttgtcaat ttgattattg acacataata catgtttaca aataaactgt 480
ggtattgatc aaaaaaaaaa aaaaaaanc cggggggggg cccggaaccc aatccc 536

```

```

<210> 222
<211> 2409
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (694)..(694)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (716)..(716)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (755)..(755)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (761)..(761)
<223> n equals a,t,g, or c

```

```

<220>

```

<221> misc_feature
 <222> (791)..(791)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (808)..(808)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (880)..(880)
 <223> n equals a,t,g, or c

<400> 222
 ccacgcgtcc ggcgagacgc gttcaccacc atatgcactg ttgtcaactc ccctggagat 60
 gcgcccaagc cccacaggaa gccttcctcc tctgcctcct cttcctcatc ctcgtcctcg 120
 ttctccttgg atgcagccgg ggcctccctg gccacactcc ctggaggctc catcctgcag 180
 ccgcggccct ccttgccctt ctcctccacg atgcacttgg ggcctgtggt ttccaaggcc 240
 ctgagtagct cttgccttgt ttgctgcctc tgccaaaacc cggccaactt caaggacctt 300
 ggggacctct gtggggcccta ctaccctgaa cactgcctcc ccaaaaagaa gccaaaactc 360
 aaggagaagg tgcggccaga aggcacctgt gaggaggcct cgctgccgct tgagagaaca 420
 ctcaaaggct ccgagtgtgc agctgccgcc actgccggga agccccccag gcctgacggc 480
 ccagctgacc cggccaagca gggccactg cgcaccagt cccggggcct gtcccgagg 540
 ctgcagagct gctactgctg tgatggccgg gaggatgggg gcgaggaggc agccccagcc 600
 gacaagggct gcaaacatga gtgcagcaag gaggctccgg cagagcccg cggggaggcc 660
 caggagcact ggggtgcatga ggcctgtgcc gtgnggaccg gcggcgtcta cctgngggcc 720
 gggaagctct ttgggctgca ggaggccatg aaggngggccg nggacatgat gtgttccagc 780
 tgccaagaag ncggggccac catcggnngc tgccacaaag gatgcctcca cacctaccac 840
 taccctgtgt ccagcgatgc aggttgcata ttcatcgaan agaacttttc tttgaaatgt 900
 cccaaacata agaggctgcc gtagtaatcc accccaacgg ccggaggagc cgccggagcc 960
 cgctgcccgc cccgcgcgcg aaggagagga gccgcctgcg cagcccccg gcctttgagc 1020
 tgctcccagc gctgggtccag agccgatcct tgatccgggt cccggatcgt ggatccggcc 1080
 gcctagggtc cagacttgcc gccccgggtt gggaggaaaa cccgttccgg agccgcctgc 1140
 tcccgaacc ggacggcaca gggcggttctt gccaccacca ggggcccaggc ttgcccagg 1200
 ggagcccgcg gaggcgccag actcccggg gcgctcagcc tccggcgagg gtgggagacg 1260
 gctttgtcct ggggacactt tccctctgga atctcaagac gacgtggcac acattccacg 1320
 tgggtgctgc cgccacccca gtccgtctgt gcgtgcagct gggagccctg ggcttggggg 1380
 ttgggggtcga aacagtactg gaagaggcgg agggcggctc ctagctccgt ggactaggcg 1440
 ggggagaaaag gaagcctttc tgagagcggg ctaggcggc actggagagg ccggagcctt 1500
 tggaacaaac cgtgcggaac gcgtccaggg gccttcccgc ccagcctttg ccagatctct 1560
 cgtgcgggtc gggcaaaagg ggggtagacc tgggctatgc tcagttaggg gttgcgggat 1620
 ccccgagtgt gggcgggact gggacaccct ttggcctctg tttgtcccct ttccagtcct 1680
 ccacccacc cctggagccc agcctgggag cgcaaaacc aagaagcggc cagaacgcac 1740
 ctccggctcc ggcggacgcg cgaccgttgt gcaccaccag ggaccgccc gcctactctg 1800
 cacgggagca gggacagcgc tagatttcgt gtacaaaacc tgtgtacccc tctatatata 1860
 tgttatatag aatgtatata tgttgggaac atgctcgctt ctcccggtgt tcgccgcgt 1920
 gcgtcgtgcg ccgcgaacag agccccaacc gggcctttgc cgggtaagg gctaccgcga 1980
 cgccacttgt ccacgcagcc accaccggc cgggccagtc cctgccagtc cgtccgcctg 2040
 tccgtccgtg tctcagctc tgtccacgct tcgataggcc tgacgcagcc ccagcccag 2100
 gggccgacct gcaacttctt gtacatatga ctgtaaaatg gtaaacgtgt gtattatatc 2160
 tggcctcggt tatagtgtata tatatatata tatatatata atatatgaag 2220
 actgtaaaatg ttaagacgac tagtgttctt attagtatat tgcttcacac tgaagattgt 2280
 gtgtatcgag ctgtttctaa aagatgttta ttttccttaa gagtaaaaaa cagtcattgc 2340
 attcagaaaa aaaaaaaaaa aaaaagtcaa taaagatata acgattgttt tggaaaaaaa 2400
 aaaaaaaaaa 2409

<210> 223
 <211> 737
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (1)..(1)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (21)..(21)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (369)..(369)
 <223> n equals a,t,g, or c

<400> 223
 nagagggaag agagaaaaag ntacaatgct tcgccgtycg setktmcgkc csygtcctca 60
 gctctgtcca cgcttcgata ggcctgacgc agccccagc ccagggccgc cctagcaact 120
 tcctgtacat atgactgtaa aatggtaaac gtgtgtatta tatctggcct cgttatatag 180
 tgtatatata tgtatacata tacatatata taatatatat gaagactgta aatgttaaga 240
 cgactagtgt tcttattagt atattgcttc acactgaaga ttgtgtgtat cgagctgttt 300
 ctaaaagatg tttattttcc ttaagagtaa aaaacagtca ttgcattcag aaaaaaaaaa 360
 aaaaaaang tcaataaaga tacaacgatt gttttggaaa atctgcagcc cgtggattcc 420
 gaccagattc agctgggagc cgggccaggc tttaggttg ggaatgggaa tgaaggagg 480
 ggctgggggg gggggcatga atggagtcag ggagtcggcc ttccacagaa caggaaacct 540
 cccccgcccc tgtgccccct ctccagtggt gcggcaggtc gggaggagg aggcttcttt 600
 gctgtgagat gaccaggggc cgggatgggg gaggtgagac gtgccagact tcttgcaggg 660
 agaccaagc tgtagctcct gtcccacaac aggtcctgga agtcagtcda tcctcccgtg 720
 cccccaggg acctaatt 737

<210> 224
 <211> 1471
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (798)..(798)
 <223> n equals a,t,g, or c

<400> 224
 tttctgaatg caatgactgt tttttactct taaggaaaat aaacatcttt tagaaacagc 60
 tcgatacaca caatcttcag tgtgaagcaa tataactaata agaactactag tcgtcttaac 120
 atttacagtc ttcatatata ttatatatat gtatatgtat acatatatat acactatata 180
 acgaggccag atataataca cacgtttacc attttacagt catatgtaca ggaagttgct 240
 agggcggccc tgggctgggg gctgcgtcag gcctatcgaa gcgtggacag agctgaggac 300
 acggacggac aggcggacgg actggcaggg actggcccg gccggtggtg gctgcgtgga 360
 caagtggcgt cgcggtagcc ccttaccgg caaaggcccg gttggggctc tgttgcgggc 420
 gcacgacgca cggcggcgac acacgggaga agcgagcatg ttcccaacat atatacatc 480
 tatgtaacat atatataagag ggttacacag gttttgtaca cgaaatctag cgtgtccct 540
 gctcccgtgc agagtaggcg cggcggtccc tgggtggtgca caacggtcgc gcgtcccgcc 600
 gagccggagg tgcgttcttg ccgcttcttg ggttttgccg tcccaggctg ggctccaggg 660
 gtggggtgga ggactggaaa ggggacaaac agaggccaaa ggggtgtcca gtcccggcca 720
 cactcgggga tcccgaacc cctaactgag catagcccar gtctaccgg gctttgcccg 780
 aaccgcacga gagatctngc aaargctggg cggraaggcc cctgracgcy ttccgcacgg 840
 tttgttccaa aggcctccggc ctytccagtg ccggcctagc ccgctctcag aaaggcttcc 900
 tttctccycc gccctagtcca cggagctagg agccgccctc cgcctcttcc agtactgttt 960
 cgacccccac ccccaagccc agggctccca gctgcacgcc acgaccgact ggggtggcgg 1020
 cagcaccac gtggaatgtg tgccacgtcg tcttgagatt ccagagggaa agtgtcccca 1080
 ggacaaagcc gtctcccacc ctgcggggag gctgagcgcc ccggggagtc tggccgctcc 1140

gcgggctccc	cctccgcaag	cctggccctt	ggggtgggca	agaacgccct	gtgccgtccg	1200
gttccgggag	cagkcggtc	cggaacgggt	tttctccca	accggggcc	gcaagtctga	1260
gccctaggcg	gcccgatcca	cgatccggga	cccggatcaa	ggatcggtc	tggaccagcg	1320
ctgggagcag	ctcaaaggcc	cgggggctgc	gcaggcggt	cctctcttc	ggcggcsgc	1380
gggcaggcgg	gctccggcgg	ctcctmcgrc	cggtggggtg	gattactacg	gcagcctctt	1440
atgtttggga	catttcaaa	gggaattctc	t			1471

<210> 225

<211> 3302

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (3274)..(3274)

<223> n equals a,t,g, or c

<400> 225

tgcacccacg	cgccgcgac	ccacgcgtcc	ggggggaggt	aactgcagta	agtcgccgtt	60
ggccctggag	tcacgcgga	ttttcgaagc	tggggctggc	aagaggccgc	tggacaccac	120
gctccagtcg	tcagccact	tcctagctga	acagcgcgag	gcggcggcag	cgagccgggt	180
cccacatagg	ccgcgaatta	ttccagtacc	agtaccggga	gagaacatgt	caaagttaaa	240
accagctccc	agccaggctt	cctggaacgg	ctgagcgaga	cctcggtggg	gatgtttgtg	300
gggctcatgg	ccttctgtct	ctccttctac	ctaattttca	ccaatgaggg	ccgcgcattg	360
aagtcggaca	cctcattggc	tgaggggctc	tcgcttggtg	tgtctcccga	cagcatccac	420
agtgtggctc	cggagaatga	aggaaaggctg	gtgcacatca	ttggcgcctt	acggacatcc	480
aagcttttgt	ctgatccaaa	ctatggggctc	catcttccgg	ctgtgaaact	gcggaggcac	540
gtggagatgt	accaatgggt	agaaactgag	gagtcagggt	agtacaccga	ggatgggcag	600
gtgaagaagg	agacgaggtg	ttcctacaac	actgaatgga	ggtcagaaat	catcaacagc	660
aaaaacttcg	accgagagat	tggccacaaa	aaccccgagt	ccatggcagt	ggagtcattc	720
ayggcaacag	ccccctttgt	ccaaattggc	aggtttttcc	tctogtcagg	cctcatcgac	780
aaagtgcgac	acttcaagtc	cctgagccta	tccaagctgg	aggaccctca	tgtggacatc	840
attcgcctgt	gagacttttt	ctaccacagc	gaaaatccca	agtatccaga	gktgggagac	900
ttgcgtgtct	ccttttcccta	tgctggactg	agcggcgatg	accctgacct	gggcccagct	960
cacgtggtca	ctgtgattgc	ccggcagcgg	ggtgaccagc	tagtcccatt	ctccaccaag	1020
tctggggata	ccttactgct	cctgcaccac	ggggacttct	cagcagagga	ggtgtttcat	1080
agagaactaa	ggagcaactc	catgaagacc	tggggcctgc	gggcagctgg	ctggatggcc	1140
atgttcatgg	gcctcaacct	tatgacacgg	atcctctaca	ccttgggtga	ctggtttctt	1200
gttttccgag	acctggtcaa	cattggcctg	aaagcctttg	ccttctgtgt	ggccacctcg	1260
ctgacctctg	tgacctgggc	ggctggctgg	ctcttctacc	gacctctgtg	ggccctctct	1320
attgccgggc	tggcccttgt	gcccacacct	gttgctcgga	cacgggtgcc	agccaaaaag	1380
ttggagtga	aagacctggg	cacccggcgg	acacctgcgt	gagccctagg	atccagggtc	1440
tctctcacct	ctgaccagc	tccatgccag	agcaggagcc	ccggtcaatt	ttggactctg	1500
cacyccctct	cctcttcagg	ggccagactt	ggcagcatgt	gcaccaggtt	ggtgttccac	1560
agctcatgtc	ttccccacat	ctcttcttgc	cagtaagcag	ctttgggtgg	cagcagcagc	1620
tcataaatgg	caagctgaca	gcttctctct	ctgtttcctt	cctctcttgg	actgagtggg	1680
tacggccagc	cactcagccc	attggcagct	gacaacgcag	acacgctcta	cggaggcctg	1740
ctgataaagg	gctcagcctt	gccgtgtgct	gcttctcatc	actgcacaca	agtgccatgc	1800
tttgccacca	ccaccaagca	catctgtgat	cctgaagggc	ggccgttagt	cattactgct	1860
gagtcctggg	tcaccagcag	acacactggg	cattggacccc	tcaaagcagg	cacacccaaa	1920
acacaagtct	gtggctagaa	cctgatgtgg	tgtttaaaag	agaagaaaca	ctgaagatgt	1980
cctgaggaga	aaagctggac	atatactggg	cttcacactt	atcttatggc	ttggcagaat	2040
ctttgttagt	tgtgggatct	ctgaaggccc	tatttaagtt	tttcttctgt	actttgtctg	2100
ttcatgtgta	ctttcctacc	ccaagaggaa	gttttctgaa	ataagattta	aaaacaaaac	2160
aaaaaaaaaca	cttaatat	cagactgtta	caggaacac	cctttagtct	gtcagttgaa	2220
ttcagagcac	tgaaagggtg	taaattgggg	tatgtggttt	gattgataaa	aagttacctc	2280
tcagtatttt	gtgtcactga	gaagctttac	aatggatgct	tttgaaacaa	gtatcagcaa	2340
aaggatttgt	tttactctg	ggaggagagg	gtggagaaag	cacttgcttt	catcctctg	2400
catcggaaac	tcccctatgc	acttgaagat	ggttttaaag	attaaagaaa	cgattaagag	2460
aaaaggttgg	aagctttata	ctaaatgggc	tccttcatgg	tgacgccccg	tcaaccacaa	2520
tcaagaactg	aggcctgagg	ctggttgtac	aatgccacac	cctgcctggc	tgctttcacc	2580

tgggagtgtct	ttcgtatgtgg	gcacctgggc	ttcctagggc	tgcttctgag	tggttctttc	2640
acgtgttgtg	tccatagctt	tagtcttcct	aaataagatc	caccacaccc	taagtcacag	2700
aattttctaag	ttccccaact	actctcacac	ccttttaag	atdaagtatg	ttgtaaccag	2760
gatgtcttaa	atgattcttt	gtgtaccttt	tctgtcatat	tcagaaaccg	ttttgtgcct	2820
gctgggagta	attccttttag	caattaagta	tttggtagct	gaataagggg	tcagaacttc	2880
tgaaccaga	gatctgtaat	catctctatt	ggcctgggg	gcctgtgcta	taaagtgtt	2940
tcttcacatg	aaaaacacag	ccagcccaag	atgacttatc	tgggtttagg	attcaatagt	3000
attcactaac	tgcttattac	atgagcaatt	tcatcaaatt	tccaaactct	taaaggatgc	3060
tttcggaaaa	cacgtgtgat	acctagatga	tgactaaatg	caaaatcctt	gggctttgg	3120
ttttttctag	taaggatttt	aaataactgc	cgacttcaaa	agtgttctta	aaacgaaaga	3180
taatgttaag	aaaaatttga	aagctttgga	aaaccaaatt	tgtaatatca	ttgtattttt	3240
tattaaaagt	tttgtaataa	atttctaaat	tatnaaaaaa	aaaaaaaaaa	aaaaaaaaaa	3300
aa						3302

<210> 226

<211> 2227

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (289)..(289)

<223> n equals a,t,g, or c

<400> 226

cggacgcgtg	ggcgcaccca	cgcgtccggg	aaaaarggaa	aatatgccgt	gtaaaatctc	60
gttctgtgtc	tgaattgccg	taggctcaga	tcttcatttg	aggttctgtg	tctgaattgc	120
cgtaggctca	gatcttcatt	tgaggttatg	ttctataagt	taacgttgat	cttgtgtgag	180
ctttcggtag	ctggagtaac	acaggcggcc	tcacagcgac	ctctccagcg	ccttccaagg	240
cacatctgca	gccagcgtaa	tcctcctggg	agatgcctcc	tcaaggccnt	gctccagacc	300
acgtggggar	ggcctgcacar	ccaattccca	ggctgtcccc	acccttgrag	agtgacccta	360
aacgctagac	agatggggaa	tgggaaagaa	aagaaagctg	cagacctcaa	gttaaaattc	420
cctcaaaaac	gtttttattt	atctgctttt	tctgaaagga	taaaggcttt	ttgaaaatta	480
ttttctaaca	aataacatga	acacttctag	aaaccctaga	aaaacacaaa	gtattcaaaa	540
tagaaagaaa	aattaccat	tactctttaa	gccagcatta	tccattgcgg	tgcttttgga	600
gttggtgtgag	gccgtagcct	ctgccaaagt	aaggagcccg	gtggtggctg	tggcattcct	660
gcagggttgt	tttttttct	ttgagatgga	gtctcactct	tgtcacccca	gctggaatgt	720
ggtaggtgtaa	acagctcact	cgagccttga	ccttgaggct	caagcgatcc	ttctgccttg	780
gcctcctgag	tagctgggat	cccaggcgag	agtcaccaca	ccctgtccat	gttctctgag	840
gtcttgatat	gcgaggacgc	tgtgtcttcc	ctgccacatt	ttcttcttct	ttcttgagac	900
agacccttgc	tccatcaccc	aggccagagt	gtggtsgtgc	gaacacggct	cactgcagcc	960
tcgacctca	ggetcaagcg	atcctcacgc	ctcggacccc	caaagtgtctg	ggatcacagg	1020
cgagagtac	catgtcggcc	tgaatcttca	gggtatttta	cggttgaagt	gtcacttact	1080
tarccatssc	tgtttcaaga	gtgtaggtgg	tcaccctgtc	tctgycgtcg	acctggcctg	1140
gacctctggc	tgtgagaggg	aggggtgggc	tgggctggag	gaacctraag	ccctcgtgat	1200
gtcacaagcc	catctggctg	ggcatccct	gctgtgtcct	gagctgcaca	tgccccagg	1260
ggccccaca	gcagaggcga	gccactgrag	ggtgragggc	ttccacggac	ggtcttcagg	1320
ggragaagaa	gggcccaggc	ccccaggaga	ctcaggagac	cagagccttg	ggtcaggggc	1380
tyagcagggg	ctyarccagg	gctggatgtc	cggagccagc	ccgmagccc	tgkgktcttt	1440
gttcttcgca	ctcccaccgt	ccgtgtgaac	agctccagcc	ccacctgcgc	ctccctgtgc	1500
tgggctccat	cagggagccc	agaagacgtg	tgtgcttctg	aaattgggtc	cctacatgcc	1560
tttgtcccag	tgacacttgc	tccttccatt	tactatcgag	atttaaattgc	ctgttttctc	1620
cccagagggt	gacggatata	ttcagacgtt	acgacacgga	tcaggacggc	tggattcagg	1680
tgctcgtacga	acagtacctg	tccatggtct	tcagtatcgt	atgaccttg	cctctcgtga	1740
agagcagcac	aacatggaaa	gagccaaaat	gtcacagtct	ctatctgtga	gggaatggag	1800
cacagggtgca	gttagatgct	gttcttcctt	tagattttgt	cacgtgggga	cccagctgta	1860
catatgtgga	taagctgatt	aatggttttg	caactgtaat	agtagctgta	tcgttctaatt	1920
gcagacattg	tatttggtga	ctgtctcatt	gtgccatgag	gtaaatgtaa	tgtttcaggc	1980
attctgcttg	caaaaaaatc	tatcatgtgc	ttttctagat	gtctctggyt	ctatagtgca	2040
aatgctttta	ttagccaata	ggaattttta	aataacatgg	aacttacaca	aaaggctttt	2100
catgtgcctt	acttttttaa	aaaggagttt	attgtattca	ttggaatatg	tgacgtaagc	2160

aataaaggga atgttagacg tgtaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 2220
 aaaaaaa 2227

<210> 227
 <211> 2214
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (289)..(289)
 <223> n equals a,t,g, or c

<400> 227
 cggacgcgtg ggtcgaccca cgcgtccggg aaaaarggaa aaratgccgt gtaaaatctc 60
 gttctgtgtc tgaattgccg taggetcaga tcttcatttg aggttctgtg tctgaattgc 120
 cgtaggctca gatcttcatt tgaggttatg ttctataagt taacgttgat cttgtgtgag 180
 ctttcggtag ctggagtaac acaggcggcc tcacagcgac ctctccagcg ccttccaagg 240
 cacatctgca gccagcgtam tcctcctggg agatgcctcc tcaaggccnt gctccagacc 300
 acgtgggrar ggccctgacaa gccaatcccc aggtgtgtccc cacccttgra gagtgacctt 360
 aaacgctaga cagatgggga atgggaaaga aaagaaagct gcagacctca agttaaatt 420
 cctcaaaaaa cgttttttatt tatctgtctt ttctgaaagg ataaaggctt tttgaaaatt 480
 attttctaac aaataacatg aacacttcta gaaaccctag aaaaacacaa agtattcaaa 540
 atagaaagaa aaattaccca ttactcttta agccagcatt atccattgcg gtgcttttgg 600
 agttgggtga ggccgtagcc tctgccaagt caaggagccc ggtgggtggc gtggcattcc 660
 tgcagggttg tttttttttc tttgagatgg agtctcactc ttgtcacccc agctggaatg 720
 tgggtgtgta aacagctcac tgcagccttg accctgaggg tcaagcgatc cttctgcctt 780
 ggctcctcga gtacgtggga tcccaggcga gagtccaccac accctgtcca tgttctcga 840
 ggtcttgata tgcgaggacg ctgtgtcttc cctgccacat tttcttcttc tttcttgaga 900
 cagacccttg ctccatcacc caggccagag tgtggtsgtg cgaacacggc tcaactgcagc 960
 ctgcaccctc aggtcgaagc gatcctcacg cctcggaccc ccaaagtgcg gggatcacag 1020
 gcgagagtcga ccatgctggc ctgaatcttc aggggtatttr cgggttgargt gycacttact 1080
 tarccatscc tgtttcaaga gtgtaggtgg tcaccctgtc tctgccgctg acctggcctg 1140
 gaccctcggc tgtgagaggg aggggtgggc tgggctggag gaacctraag cctcgtgat 1200
 gtcacaagcc catctggctg ggcatccctt gctgtgtcct gagctgcaca tgccccagg 1260
 ggccccca gcagaggcga gccactgrag ggtgragggc ttccacggac ggtcttcagg 1320
 ggragaagaa gggcccaggc cccaggaga ctcaggagac cagagcctgg ggtcaggggc 1380
 tmaccagggg ct yarccagg gctggatgtc cggagccagc cccgmagccc tgkgktcttt 1440
 gttcttcgca ctcccaccgt ccgtgtgaac agctccagcc ccacctgcgc ctccctgtgc 1500
 tgggtcccat caggagagcc agaagacgtg tgtgcttctg aaattgggtc cctacatgcc 1560
 tttgtcccag tgcaccttgc tccttccatt tactatcgag atttaaattgc ctgttttctc 1620
 cccagagggt gacggtatata ttcagacggt acgacacgga tcaggacggc tggattcagg 1680
 tgtcgtacga acagtacctg tccatggctc tcagtatcgt atgaccctgg cctctcgtga 1740
 agagcagcac aacatggaaa gagccaaaat gtacagttc ctatctgtga gggaatggag 1800
 cacaggtgca gtttagatgct gttcttcctt tagattttgt cacgtgggga cccagctgta 1860
 catatgtgga taagctgatt aatggttttg caactgtaat agtagctgta tcgttctaata 1920
 gcagacattg gatttgggtga ctgtctcatt gtgccatgag gtaaatgtaa tgtttcaggc 1980
 attctgcttg caaaaaaatc tatcatgtgc ttttctagat gtctctgggt ctatagtgc 2040
 aatgctttta ttagccaata ggaattttta aataacatgg aacttacaca aaaggctttt 2100
 catgtgcctt acttttttaa aaaggagttt attgtattca ttggaatatg tgacgtaagc 2160
 aataaaggga atgttagacg tgtaaaaaaa aaaaaaaaaa aaaaaaaaaa aaag 2214

<210> 228
 <211> 1145
 <212> DNA
 <213> Homo sapiens

<400> 228
 tttttttttt tttttttttt ttgactgaac taagtggctt ttttattaga gaaagccaga 60
 attacaaaag acttcccttt tcttggggta tggctgtctc agcacaatac tcaacataac 120
 tgcagaactg atgtggctca ggcaccctgg ttttaattcc ttgaggatct ggcaattggc 180

ttacgcaaaa	ggtcaccatt	tgaggctctg	ccttactaat	tatgtgctgc	ccaacaacta	240
aatttgtaat	ttgtttttct	ctagtttgag	cagggctctga	atTTTTtcat	ttatttcctt	300
ttttgccagc	agacagactt	gagtcctgta	agacaagcaa	atacactgac	agaagtttac	360
catagtttct	aaaatgtaaa	aaagaaaacc	cccaaaagac	tcaagaaaat	tagaccacaa	420
atTTtgcat	gttcattgta	gcactattgg	taataaaata	acaaatgttt	gtgcattttt	480
atgtgaagat	ccttctcgta	tttcatttgg	aaagatgagc	aagaggctctg	cttccttcat	540
tttacttccc	cttctgtttt	tgaaaggcag	tttcgccaa	cttaatgcaa	gaatatctga	600
ctgtttagaa	gaaagatatt	gccacaatct	ctggatgggt	ttccagggtt	gtgttattac	660
tgagcttcat	ctttccagaa	tgagcaaaac	actgtccagt	ctttgttacg	atTTtgtaat	720
aaatgtgtac	atTTTTttta	aatttttggg	catcacatga	ataaagggtat	gtatgtacga	780
atgtgtatat	attatatata	tgacatctat	tttgaaaaat	gtttgccctg	ctgtacctca	840
tttttaggag	gtgtgcattg	atgcaatata	tgaaaatggg	acattctgga	actgctggtc	900
aggggacttt	gtcgccctgt	gcactaaaag	ggccagattt	tcagcagcca	aggacatcca	960
tacccaagtg	aatgtgatgg	gacttaaaag	aagtgaactg	agacaattca	ctctggctgt	1020
ttgaacagca	gcgtttcata	ggaagagaaa	aaaagatcaa	tcttgtattt	tctgaccaca	1080
taaaggcttc	ttctctttgt	aataaagtag	aaaagctctc	ctcaaaaaaa	aaaaaaaaaa	1140
aaaaa						1145

<210> 229

<211> 802

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (337)..(337)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (359)..(359)

<223> n equals a,t,g, or c

<400> 229

ggtgggtgac	cagagagtcc	tgtctatcct	aggaggagaa	cattcagccc	aaatcccagc	60
cccatcatgc	acagatcaga	gccatttctg	aaaatgtcgc	tgctgattct	gcttttcctg	120
ggattggcag	aagcctgtac	tcctcgtgaa	gtcaacttgc	tgaaagggat	cataggtctc	180
atgagcagac	tgtaaccgga	tgagatccta	ggcttgctga	gcctccaagt	actgcatgaa	240
gaaacaagtg	gtcgcaagga	ggaagttaaa	cccttctcag	gcaccacccc	atccaggaaa	300
ccactcccca	agagggaaga	acacgtggaa	yttcctngaa	atgcgsctac	atgggtgrtng	360
acctacctct	tcgtatccta	caacaaaggg	gactggttca	ctttttcctc	ccaagtgtta	420
ctgccaytac	tgtaacttgg	aactggacat	cagggatgat	ccctgctggt	ctttctagt	480
agcctgctcc	atctcagctt	agccttcaca	aggcctccat	ctcccaggca	ttctaacctc	540
tgaagaaagc	tctctgtccc	ctggactgcc	tgtgtggagg	gtaatgaact	gggtccttta	600
aggaatgggc	cctgggtgcc	cagaggcatg	gccagaagg	gtctgtgggg	gccatgcctt	660
agggggatgc	acccagggcg	gctgagagag	caactgcagg	agtttcccct	aaaatctctc	720
ctccagatcg	ttctcgaact	ttccccacta	cttcataat	aaaatgtata	cttgttgaaa	780
aaaaaaaaaa	aaaaaactcg	ag				802

<210> 230

<211> 711

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (345)..(345)

<223> n equals a,t,g, or c

<400> 230

ggcacgagcg	aagaccctgt	tcggaccctg	ccccgattcc	agactcaggt	agatcgctcg	60
------------	------------	------------	------------	------------	------------	----

cataccctct	accgtggaca	ccaggcagcc	ctggggctga	tggagagaga	tcaggtatcc	120
cccagggagt	aggggctacc	ttgaggggat	gatagacctc	ccccactccc	agtgkactc	180
tggaaatatg	aaggaactag	ggagtgggaag	agatttcaga	gctggggaga	ggagttcctc	240
ccttcaaagc	cagcaactgc	ctttggggaa	tgctgggggg	tctctccttt	ctcctgcttg	300
tttragggtg	tacacagtcc	ccccttcamc	tggsgggaag	ctgtnccgga	caractcatc	360
tcagctttcc	cttggggcag	gatcgggggc	agcagctcca	gcagaaacag	caggatctgg	420
agcaggaagg	cctcgaggcc	acacaggggc	tgctggccgg	cgagtggggc	ccaccctct	480
ggragctggg	cagcctcttc	caggccttcg	tgaagaggga	gagccaggct	tatgcgtaag	540
cttcatagct	tctgctggcc	tggggtggac	ccaggacccc	tggggcctgg	gtgccctgag	600
tggtggtaaa	gtggagcaat	cccttcacgc	tccttggcca	tggtctgagc	ggccagcttg	660
gcctttgcct	taataaatgt	gctttatttt	caaaaaaaaa	aaaaaaaaac	t	711

<210> 231

<211> 1614

<212> DNA

<213> Homo sapiens

<400> 231

ggtgattggt	agttactatg	tggggacaca	attacttggg	ctgaaataat	ccacctgttg	60
tggttggggt	cctctggggc	attccagggg	gagaggttgt	cactgccacc	tgggccatgt	120
gggcccggac	cagcatTTTT	tggttacgaa	ttctacagtc	acaaatatct	ttgggcaaat	180
ccccttctat	acctcaaggc	agcttttggg	ttgcaacccc	actggccaga	gggaaggggc	240
agtcacttgg	ctctctcact	gccctgcgcc	ccagatgggt	ctagggctgc	tgttttccct	300
tggccctgce	aacaccactg	tttttacttc	tgctcattgg	ctgagtgcag	tggttcctgg	360
aagccagtgg	cacgtttccc	cgcgtagctc	gcttatccca	cagcacacac	ccaagggttc	420
tggttgtaac	acgctgaatt	aattctttgc	tcactttaca	gagtgtgttt	tgactgcccc	480
catttctgag	gccttgtaag	gccagagctt	tgttgcttca	tcggcagggt	gggacttaga	540
tggccgtgaa	tgtttcctct	ctgctgctgc	agtaagtaag	tgcccgcacc	atagtgtgtt	600
tggaggctga	agttgaagcg	aggctgtgag	gggagatgga	cgtgtgagga	gggatgatgg	660
ggcttgagca	aagtggggga	ggggcaaaagc	agttggccca	acacattccc	cacccttttg	720
agaggctcga	ggcctgcaga	cctggctcgg	agccccacctg	gtagtccctca	gactgtgtgt	780
gtgtgtgtgt	gtgtgtgtgt	gtgtgtgtgt	gtgtgtgtgt	gtaaaagaga	gaagtgtgtg	840
agaaatgggg	ggctgattct	gtcagattc	atcaggatga	gtagaaggca	cccagctctc	900
accctggcct	gacatgtgtg	tccctgagca	ggttacagtc	ctctctgagc	ctctgcttcc	960
catctggacc	ctgctgggca	gggcttctga	gctccttagc	actagcagga	ggggctccag	1020
ggggccctccc	tccatggcag	ccaggacagg	actctaaaat	gaggacagca	gagctcgtgg	1080
ggggctccca	cggaccgcgc	gtgggcccag	gggaggcaga	gcctgagcca	acagcagtgg	1140
tgctgtggac	cgtggatcct	gaggggtggc	tggggcaagt	accggctgag	ggtccagggtg	1200
ggcttgtgtg	accttgggtg	cctggggccc	tggtgacttg	gactccagggt	tagagtcaag	1260
tgacaggaga	aaggctggtg	gggccctgtg	cttccgactt	catttctgagt	gatggcagtt	1320
cccaggaagg	aatccacagc	tgacggtggc	tgacagatca	gagaatggaa	ggcgaggcag	1380
gcgggcgctc	gcgtgacctc	aggtgcttgg	ggcccagcag	acccagagaa	ccatttccac	1440
taggccaggg	tgccggaagt	gtccacagggt	cttagattcc	ctgttcagat	gaaaagattt	1500
gtgcctttaa	tgataaaagt	gatctgcata	gagtcaaaaa	ttcaagccat	gggtataaaa	1560
tgcaagtaaa	atccctgccc	tcacctatcc	caccctacta	cacagagatg	tcct	1614

<210> 232

<211> 1087

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (14)..(14)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (55)..(55)

<223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (63)..(64)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (174)..(174)
 <223> n equals a,t,g, or c

<400> 232
 caagttaaag taangtggcc ccggcaacca ataagtgttg tttttggaag ggctngaaag 60
 tttnaaagcg agggcttgta aaggggaaga tgggaccgtt gtgaaggaag gatgattggg 120
 gctttgaagc aaaagtgggg gaagggggca aaggcagttg gcccaacaca ttcnccaccc 180
 ctttgagagg tctgaggcct gcagacctgg ctccggagccc acctggtagt cctcagactg 240
 tgtgtgtgtg tgtgtgtgtg tgtgtgtgtg tgtgtgtgtg tgtgtgtaaa agagagaagt 300
 tgtggagaaa tgggggggctg attctgctca gattcatcag gatgagtaga aggcaccctag 360
 ctctcaccct ggccctgacat gtgtgtccct gagcagggtta cagkcctctc tgagcctctg 420
 cttcccatct ggaccctgct gggcagggtt tctragctcc ttagcactag caggagggggc 480
 tccaggggcc ctccctccat ggcagccagg acaggactct aaaatgagga cagcagagct 540
 cgtggggggc tcccacggac ccgckctggg cccaggggag gcagagcctg agccaacagc 600
 agtgggtgctg tggaccgtgg atcctgaggg tggcctgggg caagtaccgg ctgagggtcc 660
 aggtgggctt tgtgtacctt tgggtcctgg ggccctgggt acttggactc cagggttagag 720
 tcaagtgaca ggagaaagggc tgggtggggc ctgtgtcttc gacttcattt cgagtgtatg 780
 cagttcccgag gaaggaatcc acagctgacg gtggctgaca gatcagagaa tggaaggcga 840
 ggcaggcggg cgtctgcgtg acctcaggtg ctltggggccc agcagaccga gagaaccatt 900
 tccactagggc cagggtgccc gaagtgtcca caggctcttag attccctgtt cagatgaaaa 960
 gatttgtgcc tttaatgata aaagtgtatc gcatagagtc aaaaattcaa gccatgggta 1020
 taaaatgtca agtaaaatcc ctgccctcac ctatcccacc ctactacaca gagatgtcct 1080
 ctcgagg 1087

<210> 233
 <211> 1191
 <212> DNA
 <213> Homo sapiens

<400> 233
 gctgggctgg aacacaagar cccacagggc tgcggtccac actctcccgg tcagagtcct 60
 gggaccacat ggggacgctg ccatggcttc ttgccttctt cattctgggt ctccaggctt 120
 gggatactcc caccatcgtc tcccgcgaagg agtggggggc aagaccgctc gcctgcaggg 180
 ccctgctgac cctgcctgtg gcctacatca tcacagacca gctcccaggg atgcagtgcc 240
 agcagcagag cgtttgcagc cagatgctgc gggggttgca gtcccattcc gtctacacca 300
 taggctggtg cgacgtggcg tacaacttcc tgggtgggga tgatggcagg gtgtatgaag 360
 gtgttggtg gaacatccaa ggcttgacac cccaggggta caacaacatt tccctgggca 420
 tcgccttctt tggcaataag ataagcagca gtcccagccc tgctgcctta tcagctgcag 480
 agggctgat ctccatgccc atccagaagg gtcacctgtc gcccagggtat attcagccac 540
 ttcttctgaa agaagagacc tgcctggacc ctcaacatcc agtgatgccc agraaggttt 600
 gcccacacat catcaaacga tctgcttggg aagccagaga gacacactgc cctaaaatga 660
 acctcccagc caaatatgtc atcatcatcc acaccgctgg cacaagctgc actgtatcca 720
 cagactgcca gactgtcgte cgaaacatac agtcccttca catggacaca cggaactttt 780
 gtgacattgg atatcaataa ggccaggcgt ggcggcgatt acgtctgtaa tcccaggact 840
 ttgggaggcc aaggcgggca gatcacttca ggcaggaat tcaagagcag cctggccaat 900
 atggcgaaac tctgtctcta ctgaaaacaa aaacaaacaa acaaagaaac 960
 aacaaaaatt agccgggtgt ggtggcacac gcctgtagtc ccagctactc aggaggctga 1020
 ggcataagaa ttgcttgaac cctggaggcg gaggttgtag tgagctgaga ttggggccacc 1080
 gcactccagt ctgggagaca gagtgagact gtctcaaaac aacaacaaaa aaatccctaa 1140
 cataatctca aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa agggcgggccg c 1191

<210> 234
 <211> 1626
 <212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (525)..(525)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (542)..(542)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (562)..(562)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (607)..(607)

<223> n equals a,t,g, or c

<400> 234

ccacgcgtcc	gacgcggcgc	acgcggcagt	cctgatggcc	cgccatgggt	taccgctgct	60
gcccctgctg	tcgctcctgg	tcggcgcggtg	gctcaagcta	ggaaatggac	aggctactag	120
catggtccaa	ctgcagggtg	ggagattcct	gatgggaaca	aattctccag	acagcagaga	180
tggtgaagg	cctgtgcggg	aggcgacagt	gaaacccctt	gccatcgaca	tatttctctg	240
caccaacaaa	gatttcagg	attttgtcag	ggagaaaaag	tatcggacag	aagctgagat	300
gttttgatgg	agctttgtct	ttgaggactt	tgtctctgat	gagctgagaa	acaaagccac	360
ccagccaatg	aagtctgtac	tctggtggct	tccagtggaa	aaggcatttt	ggaggcagcc	420
tgcaggtcct	ggctctggca	tccgagagag	actggagcac	ccagtgttac	acgtgagctg	480
gratgacgcc	cgtgcctaata	gtgcytkgsg	ggggraaacg	actgncccac	sggagggaag	540
antggggagt	ttttccgccc	gnaggggggc	ttgaarggtc	caagtttacc	ccatgggggg	600
aactggnntc	cagccaaacc	gcaccaacct	gtggcaggga	aagtccccca	aggagagaaa	660
agctgaggat	ggcttccatg	gagtctcccc	agtgaatgct	ttccccggcc	agaacaacta	720
cgggctctat	gacctcctgg	ggaacgtgtg	ggagtggaca	gcatcaccgt	accaggctgc	780
tgagcaggac	atgcgcgtcc	tccggggggc	atcctggatc	gacacagctg	atggctctgc	840
caatcaccgg	gcccgggtca	ccaccaggat	gggcaacact	ccagattcag	cctcagacaa	900
cctcggtttc	cgctgtgctg	cagacgcagg	ccggccgcca	ggggagctgt	aagcagccgg	960
gtggtgacaa	ggagaaaagc	cttctagggt	cactgtcatt	ccctggccat	gttgcaaaaca	1020
gcgcaattcc	aagctcgaga	gcttcagcct	caggaaagaa	cttccccctc	cctgtctccc	1080
atccctctgt	ggcaggcgcc	tctcaccagg	gcaggagagg	actcagcctc	ctgtgttttg	1140
gagaaggggc	ccaatgtgtg	ttgacgatgg	ctggggggcca	ggtgtttctg	ttagaggcca	1200
agtattattg	acacaggatt	gcaaacacac	aaacaattgg	aacagagcac	tctgaaaggc	1260
catttttttaa	gcatttttaa	atctattctc	tccccttttc	tccctggatg	attcaggaag	1320
ctgmacattg	tttccctcaag	gcagaatttt	cttggttctg	ttttctcagc	cagttgctgt	1380
ggaaggagaa	tgctttcttt	gtggcctcat	ctgtggtttc	gtgtccctct	gaaggaaact	1440
agtttccact	gtgtaacagg	cagacatgta	actattttaa	gcacagttca	gtcctaaaag	1500
ggtctgggag	aaccagatga	tgtactagg	gaagcattgc	attgtgggaa	tcacaaagca	1560
aatagtactc	cagaaagacc	ctgtctcaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	1620
aaaaaa						1626

<210> 235

<211> 2351

<212> DNA

<213> Homo sapiens

<400> 235

ccacgcgtcc	ggcagaagca	gcagcagcag	aagacacagc	gccggtccag	gaggcggctc	60
gagctgttcg	taaagtcgcc	cgacagcttt	ttctccgtag	tatgcgagtt	gacaaaacag	120
ccagagaaca	gggctcccca	ttacaatctt	ttcgagatct	tttcccttgc	taaccggatc	180

tgatttgtgc	gaaaacatgc	cttgcaacttg	tacctggagg	aactggagac	agtggattcg	240
accttttagta	gcgggtcatct	acctgggtg	aatagtggtt	gcggttcccc	tatgcgtgtg	300
ggaattacag	aaactggagg	ttggaataca	caccaaggct	tggtttattg	ctggaatcct	360
tttgcgtgta	ctattcctat	atcactgtgg	gtgatattgc	aacacttagt	gcattatata	420
caacctgaac	tacaaaaacc	aataataagg	attctttggg	atggtaaccta	tttacagttt	480
tagatagttg	gatagctttg	aaatatcccg	gaattgcaat	atatgtggat	acctgcagag	540
aatgctatga	agcttatgta	atttacaact	ttatgggatt	ccttaccaat	tatctaacta	600
accggtatcc	aaatctggta	ttaatccttg	aagccaaaga	tcaacagaaa	catttccctc	660
ctttatgttg	ctgtccacca	tgggctatgg	gagaagtatt	gctgttttag	tgcaaaactaa	720
gtgtattaca	gtacacagtt	gtcagacctt	tcaccaccat	cgttgcttta	atctgtgagc	780
tgcttggtat	atatgacgaa	gggaacttta	gcttttcaaa	tgcttggaact	tatttggtta	840
tataaaacaa	catgtcacag	ttgtttgcca	tgtattgtct	cctgctcttt	tataaagtac	900
taaaagaaga	actgagccca	atccaacctg	ttggcaaat	tctttgtgta	aagctggtgg	960
tttttgtttc	tttttgaatt	ggcgtttacc	ttttcctaac	atataggcaa	gcagtagtta	1020
ttgctttggt	ggtaaaagtt	ggcgttattt	ctgaaaagca	tacgtgggaa	tggcaaacctg	1080
tagaagctgt	ggccaccgga	ctccaggatt	ttattatctg	tattgagatg	ttcctcgtcg	1140
ccattgctca	tcattacaca	ttctcatata	aaccatattg	ccaagaagca	gaagagggct	1200
catgctttga	ttccttttct	gccatgtggg	atgtctcaga	tattagagat	gatatttctg	1260
acaagaagta	gcatgttgga	cggacagtca	ggggacatcc	caggaaaaaa	ttgtttcccg	1320
aggatcaaga	tcaaaatgaa	catacaagtt	tattatcatc	atcatcacia	gatgcaat	1380
ccattgcttc	ttctatgcca	ccttcaccca	tgggtcacta	ccaaggggtt	ggacacactg	1440
tgactcccca	gactacacct	accacagcta	agatatctga	tgaaatcctt	agtataacta	1500
taggagagaa	aaaagaacct	tcagataaat	ccgtggattc	ctgaacagta	tggaaaagca	1560
aactgtgcaa	ctactacatt	atatcattac	ctggatatccc	atggattttg	tgcttgggac	1620
agaccataaa	tgatggaaaa	tgtaaacaca	aaaatagctg	aaagccaggt	acaactactg	1680
catttatata	tgtaagtttt	gtatatcaaa	aataatttgt	ctaaatttcc	tagacttaga	1740
cttgattttc	taacattagg	gtatcgcata	ctcaaatggg	agacaatgac	cccaactaaa	1800
tcttcctgat	gttacactgc	tttatcaaga	ggatggactt	tttttttttt	gagacagaca	1860
gagtcctgct	ctgtcaccca	ggctggagtg	cagtggcgca	atctcgggtc	actgcaagct	1920
ctgcctccca	agttcatgcc	attctcctgc	ctcagccctc	ccaagtagct	gggactacag	1980
gcacctgcca	ccatgcccag	ctaatttttt	ttttttcagt	agagacaggg	tctcaccatg	2040
ttagccagga	tggctctgat	ctgacctcgt	gatccgccga	cctcggcctc	ccaaagtgc	2100
ggaattacag	gcgtgagcca	ctgcgcctgg	ccaagaatgg	acatttttta	aaaaaacatc	2160
agtacttcct	accactgctg	catgagtata	atgctccgga	attatcagaa	agcataatgc	2220
agaaatcga	attagtggaa	cttaatcatg	tgccatataa	gcttacctaa	caaacagtta	2280
tatccctatt	cctcaactga	atgtctttca	ataaataaga	atttatcatt	taaaaaaaaa	2340
aaaaaaaaaa	a					2351

<210> 236

<211> 1001

<212> DNA

<213> Homo sapiens

<400> 236

cgcgctggaa	ccctgtggcg	gcggccatgg	ccatatggcg	ctgcccgcct	ggctgcagcc	60
aggtatagga	agaatgcgta	tcttttcac	tattacttaa	tccagttctg	tggccactct	120
tggatattta	caaatatgac	agtcagattc	ttttcatttg	gaaaaggtaa	aactccgaaa	180
cagttttttt	atttttaact	tttaatcctt	gttttcacct	catcctgctt	atattaaatt	240
tctacacacc	tcaaccttct	accacgggat	acagattcaa	tgggttgacac	tttttatgct	300
attggacttg	tgatgcgact	ttgccaatcc	gtatctctcc	tggaaactgct	gcacatatat	360
gttggcattg	agtcaaacca	tcttctccca	aggttttttg	agctcacaga	aagaataatc	420
atcctttttg	tgggtgatcac	cagtcaagag	gaagtccaag	agaaatatgt	ggtgtgtgtt	480
ttattcgtct	tttggaatct	attggatatg	gttaggtaca	cttatagcat	gttatcagtc	540
ataggaatat	cctatgctgt	cttgacatgg	ctcagtcaaa	cactatggat	gccaat	600
cctttgtgtg	ttcttgccta	agcat	atctatcaat	cgctgcctta	ttttgaatca	660
tttggcactt	attccaccaa	gctgcctttt	gacttatcca	tctatttccc	atatgtgctg	720
aaaatatatc	tcatgatgct	ctttataggt	atgtatttta	cctacagtca	tctatactca	780
kaaagaagag	acatcctcgg	aatctttccc	attaaaaaaa	agaagatgtg	aagtacagca	840
ttccagtgtg	acacgagaaa	agacaggctg	tggattcagt	gcagtaata	aaacacagga	900
agtattctgg	tggaaaaaaa	aaaaaaaaaa	aaaaaaaaar	aaaaa	aawaaaaaaa	960
aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	a		1001

<210> 237
 <211> 669
 <212> DNA
 <213> Homo sapiens

<400> 237
 ccacgcgtcc ggacactttt tatgtatttg gacttgtgat gcgactttgc caatccgtat 60
 ctctcctgga actgtgcac atatatgttg gcattgagtc aaaccatctt ctcccaagggt 120
 ttttgcagct cacagaaaga ataatacatcc tttttgtggt gatcaccagt caagagggaag 180
 tccaagagaa atatgtggtg tgtgttttat tcgccttttg gaatctattg gatatggtta 240
 ggtacactta tagcatgtta tcagtcatag gaataccta tgctgtcttg acatgggctc 300
 agtcaaacac tatggatgcc aatttatcct ttgtgtgttc ttgctgaagc atttgccatc 360
 tatcaatcgc tggcttattt tgaatcattt ggcacttatt ccaccaagct gccctttgac 420
 ttatccatct atttcccata tgtgtgaaa atatatctca tgatgtctct tataggtatg 480
 tattttacct acagtcatct atactcagaa agaagagaca tcctcggaat ctttccatt 540
 aaaaaaaga agatgtgaag tacagcattc cagtgtgaca cgagaaaaga caggctgtgg 600
 attcagtga gtaataaaaa cacaggaagt attctggtgg aaaaaaaaaa aaaaaaaaaa 660
 aaaaaaaaaa 669

<210> 238
 <211> 417
 <212> DNA
 <213> Homo sapiens

<400> 238
 ccacgcgtcc gctcctctag aggtccaca tgaagtccca gtgctacagt cctagttatt 60
 ttgccttctt ctgcctggtt ttctttcaga tcacctcagc cagttctcag acacttaggg 120
 gacatgttct ctgcaggacc actctgaggg actcttctgc atattgctga cctgagagga 180
 tggcctcaga gctgacttgg gcaatcctcc ccaacaggaa ggggagacat tgccctgccac 240
 tgaggaaaca ggtcatgaag gtggagataa gctgcaaggg gcgaagcaac tttatgtcag 300
 tggaaaacgt gtctctttaa agctgctatg tgaacagctt ttacagtcac taaatttacc 360
 taaactaagg ttaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaa 417

<210> 239
 <211> 1949
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (1130)..(1130)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (1948)..(1948)
 <223> n equals a,t,g, or c

<400> 239
 gctacgccgt gggcacttcc tcaacgacct gtgcgcgtcc atgtggttca cctacctgct 60
 gctctacctg cactcgggtg gcgcctacag ctcccgcggc gcgggctgct gctgctgctg 120
 ggccagggtg cgacgggctg tgcacaccgc tcgtgggcta cgaggccgac cgcgccgcca 180
 gctgctgctg ccgctacggc ccgcgcaagg cctggcacct ggtcggcacc gtctgcgtcc 240
 tgctgtcctt ccccttcac ttcagcccct gcctgggctg tggggcggcc acgcccagtg 300
 ggctgccctc ctctactacg gcccgttcat cgtgatcttc cagtttggct gggcctccac 360
 acagatctcc cactcagcc tcatcccga gctcgtcacc aacgaccatg agaagggtga 420
 gctcacggca ctcaggatg cgttcacctg ggtggccaac atcaccgtct acggcgccgc 480
 ctggctcctg ctgcacctgc agggctcgtc gcgggtggag cccacccaag acatcagcat 540
 cagcgaccag ctggggggcc aggcgtgcc cgtgttccgg aacctgtccc tgctggtggt 600
 ggggtgctggc gccgtgttct cactgctatt ccacctgggc acccgggaga ggcgcgggcc 660

```

gcatgcgagg gagccaggcg agcacacccc cctgttggcc cctgccacgg cccagcccct 720
gctgctctgg aagcactggc tccgggagcc ggctttctac cagggtgggca tactgtacat 780
gaccaccagg ctcatcgtga acctgtccca gacctacatg gccatgtacc tcacctactc 840
gtccacactg cccaagaagt tcatcgcgac cattccccctg gtgatgtacc tcagcggcctt 900
cttgctctcc ttccctcatga agcccatcaa caagtgcatt gggaggaaca tgacctactt 960
ctcaggccctc ctggtgatcc tggcctttgc cgcctgggtg gcgctggcgg agggactggg 1020
tgtggccgtg taygcagcgg ctgtgtgctg ggggtgctggc tgtgccacca tcctcgtcac 1080
ctcgttggcc atgacggcgg acctcatcgg tccccacacg aacagcggan ckttcgtgta 1140
cggctccatg agcttcttgg ataagggtggc caatgggctg gcagtcattg ccatccagag 1200
cctgcacccct tggccctcag agctctgctg caggggcctgc gtgagctttt accactgggc 1260
gatggtggct gtgacggggc gcgtgggcgt ggccgctgcc ctgtgtctct gtagcctcct 1320
gctgtggccc agcgccctgc gacgctggga ccgtgatgcc cggccctgac tcctgacagc 1380
ctcctgcacc tgtgcaaggg aactgtgggg acgcacgagg atgcccccca gggccttggg 1440
gaaaagcccc cactgcccct cactcttctc tggacccccca ccctccatcc tcaccagct 1500
cccgggggtg gggtcgggtg agggcagcag ggatgcccgc caggggacttg caaggacccc 1560
ctgggttttg aggggtgtcc attctcaact ctaatccatc ccagccctct ggaggatttg 1620
gggtgcccct ctcggcaggg aacaggaagt aggaatccca gaagggtctg ggggaaccct 1680
aaccctgagc tcagtccagt tcacccctca cctccagcct gggggtctcc agacactgcc 1740
agggcccccct caggacggct ggagcagccc acggggtggg gggctgggcc 1800
tggaccccac cgtgtggggc agcagggctg cccggcaggg ttgggtggact ctgctggcag 1860
caaataaaga gatgacggca aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 1920
aaaaaaaaaa aggggggggg gctagtnt 1949

```

<210> 240

<211> 1487

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (78)..(78)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (948)..(948)

<223> n equals a,t,g, or c

<400> 240

```

ccgctgtgta taactatggc atcccccggg cctgcaggaa ttcggcacgg agctacggcg 60
ccgcctggct cctgctgnca cctgcaggct cgtcgcgggt ggagcccacc caagacatca 120
gcatcagcga ccagctgggg ggccaggacg tgcccgtgtt ccggaacctg tccttctgtg 180
tgggtgggtg cggcgccgtg ttctcactgc tattccacct gggcaccctg gagaggcgcc 240
ggccgcatgc ggasgagcca ggcgagcaca cccccctgtt ggcccttgc acggcccagc 300
ccctgctgct ctggaagcac tggctccggg agcsggcttt ctaccagggt ggcatactgt 360
acatgaccac caggctcatc gtgaacctgt cccagaccta catggccatg tacctcacct 420
actcgtcca cctgcccagg aagttcatcg cgaccattcc cctggtgatg tacctcagcg 480
gcttcttgtc ctcttctc atgaagcca tcaacaagt cattgggagg aacatgacct 540
acttctcagg cctcctgggt atcctggcct ttgccgctg ggtggcgctg gcggaggggac 600
tgggtgtggc cgtgtacgca gcggtgtgct tgctgggtgc tggtgtgccc accatcctcg 660
tcacctcgtc ggccatgacg gccgacctca tcggtcccca cacgaacagc ggagckttcg 720
tgtacggctc ctgagccttc ttggataagg tggccaatgg gctggcagtc atggccatcc 780
agagcctgca cccttgcctc tcagagctct gctgcagggg ctgcgtgagc ttttaccact 840
gggcgatggt ggctgtgacg ggcggcgtgg gcgtggcggc tgccctgtgt ctctgtagcc 900
tcctgtgtg gccgaccgc ctgcgacgct gatgagacct gcacgcantg gctcacagca 960
gcacgatttg tgacagccc agggcgagaa caccgaacac ccagtgaagg tgaggggatc 1020
agcacggcgc ggccaccac gcaccacgc gctggaatga gactcagcca caaggagggt 1080
cgaagctctg acccaggcca cagtgcggat gcaccttgag gatgtcacgc tcagtgcagc 1140
acaccagaca cagaagggtg cgtgtgac cacttctat gaaatgtcca ggacagacca 1200
atccacagaa tcaggagag gattcgtggg tgccgggact ggggaggggg acctgggggt 1260
gactaggtga cataatgggg acagggtgc cttctgggtg atgagaatgt tctggaatca 1320

```

gatgggatgg	ctgcacggcg	tggatgaaggt	actgaacgcc	acctcactgt	aagacggtag	1380
atattgtatt	ttaccacaat	aaacaaaaca	aaacaaaacc	aaaaaaaaaa	aaaaaaaaaa	1440
aaaaaaaaag	aattcgatat	caagcttatc	gataccgtcg	acctcga		1487

<210> 241

<211> 1525

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (78)..(78)

<223> n equals a,t,g,. or c

<400> 241

ccgctgctga	taactatggc	atcccccggg	cctgcaggaa	ttcggcacgg	agctacggcg	60
ccgcctggct	cctgctgnea	cctgcaggct	cgctcggggt	ggagcccacc	caagacatca	120
gcatcagcga	ccagctgggg	ggccaggacg	tgcccgtgtt	ccggaacctg	tccctgctgg	180
tggatgggtg	cggcgcgctg	ttctcactgc	tattccacct	gggcaccccg	gagaggcgcc	240
ggccgcatgc	ggasgagcca	ggcagacaca	ccccctgtt	ggccccctgc	acggcccagc	300
ccctgctgct	ctggaagcac	tggctccggg	agcsggcttt	ctaccagggt	ggcatactgt	360
acatgaccac	caggctcatc	gtgaacctgt	cccagaccta	catggccatg	tacctcacct	420
actcgctcca	cctgccccag	aagttcatcg	cgaccattcc	cctgggtgat	tacctcagcg	480
gcttctgtgc	ctccttcctc	atgaagccca	tcaacaagtg	cattggggagg	aacatgacct	540
acttctcagg	cctcctgggtg	atcctggcct	ttgcccgtg	ggtggcgctg	gcggagggac	600
tgggtgtggc	cgtgtacgca	gcggctgtgc	tgctgggtgc	tggctgtgcc	accatcctcg	660
tcacctcgct	ggccatgacg	gccgacctca	tcgggtccca	cacgaacagc	ggactktcgt	720
gtacggctcc	atgagcttct	tggataaggt	ggccaatggg	ctggcagtcg	tggccatcca	780
gagcctgcac	ccttgccccct	cagagctctg	ctgcaggggc	tgctgtgagc	tttaccactg	840
ggcgatgggt	gctgtgacgg	gcggcggtgg	cgctggcgct	gccctgtgtc	tctgtagcct	900
cctgctgtgg	ccgacccgcc	tgcgacgctg	ggaccgtgat	gcccggccct	gactcctgac	960
agcctcctgc	acctgtgcaa	gggaactgtg	gggacgcacg	aggatgcccc	ccarggcctt	1020
ggggaaaagc	ccccactgcc	cctcactctt	ctctggaccc	ccaccctcca	tcctcaccca	1080
gctcccgggg	gtggggctcg	gtgagggcag	cagggatgcc	cgccaggggc	ttgcaaggac	1140
cccctgggtt	ttgaggtgtg	cccattctca	actctaattc	atcccagccc	tctggaggat	1200
ttgggggtgc	cctctcgcca	gggaacagga	agtaggaatc	ccagaagggt	ctgggggaac	1260
cctaaccctg	agctcagtc	agttcacccc	tcacctccag	cctgggggtc	tccagacact	1320
gccaggggcc	cctcaggacg	gctggagcct	ggaggagaca	gccacggggg	ggtgggggtg	1380
gcctggaccc	cacgctgggt	ggcagcaggg	ctgcccggca	ggcttgggtg	actctgctgg	1440
cagcaaataa	agagatgacg	gcaaaaaaaaa	aaaaaaaaaaa	aaaaaaaaaaa	aaaaaaaaaaa	1500
aaaaaaaaaa	aaaccacccg	tccgc				1525

<210> 242

<211> 1050

<212> DNA

<213> Homo sapiens

<400> 242

ccacgcgtcc	ggccagccag	tccgcccgtc	cggagcccgg	ctcgtctggg	cagcatggcg	60
gggtcgccgc	tgctctgggg	gccgcggggc	ggggcgctcg	gccttttggg	gctgctgctg	120
ctcggcctgt	tteggccgcc	ccccgcgctc	tgccgcgggc	cggtaaagga	gccccggggc	180
ctaagcgcag	cgtctccgcc	cttggctaga	ctggcgctcc	tcgccgcttc	cggcggtcag	240
tgccccgagg	tgaggcgggc	ggggcggtgc	agacctggcg	cgggcgctgg	cgcatctgct	300
ggagccgaac	gtcaggagcg	ggcgcggggc	gaggcgcaga	ggctgaggat	cagcaggcgc	360
gcgtcctggc	gcagctgctg	cgcgtctggg	gcgccccccg	caactctgat	ccggctctgg	420
gcctggacga	cgaccccgac	gcgcctgcag	cgagctctgc	tcgcgctctg	ctccgcgccc	480
gccttgaccc	tgccgcctca	gcagcccagc	ttgtccccgc	gcccgctccc	gccgcggcgc	540
tccgaccccg	gcccccggtc	tacgacgacg	gcccccgggg	cccggatgct	gaggaggcag	600
gcgacgagac	acccgacgtg	gaccccgagc	tgttgaggta	cttgcctggg	cggattcttg	660
cgggaagcgc	ggactccgag	ggggtggcag	ccccgcgccc	cctccgcctg	gccgcggacc	720
acgatgtggg	ctctgagctg	ccccctgagg	gcgtgctggg	ggcgtgctg	cgtgtgaaac	780

gcctagagac	cccggcgccc	caggtgcctg	cagccgcct	cttgccaccc	tgagcactgc	840
ccggatcccg	tgcaccctgg	gacccagaag	tgcccccgcc	atccccccac	caggactgct	900
ccccgccagc	acgtccagag	caacttaccc	cggccagcca	gcctctcac	ccgaggatcc	960
ctaccccctg	gccccacaat	aaacatgatc	tgaagcagca	aaaaaaaaaa	aaaaaaaaaa	1020
aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa				1050

<210> 243

<211> 647

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (525)..(525)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (578)..(578)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (581)..(581)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (620)..(620)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (629)..(630)

<223> n equals a,t,g, or c

<400> 243

gtgaaacgcc	tgggctcaag	ctgattcacc	tgccctccacc	tcccacagtg	ctgggattac	60
aaacatgatc	ccccacgccc	agccaacaca	aaactttctga	tgctctgttt	tctcatctgt	120
gaactggagc	taaggctaag	tggctctgtct	gtttaataag	agtttgaatc	agatggcctg	180
gcatgaagag	tacttgccct	gagagaatgt	caggggcatt	tgtaaatgtg	ttaaaggcctg	240
aaaaatcctg	agggattatt	attattgcta	ttgttggtat	tattcacaga	cacatycaac	300
agccattgtc	tgccctcctta	tctgtcatgc	tttctgcacg	agcgtcagcc	tgagcttcaa	360
tctgtgtgta	tatctgcagc	ttacgtcctt	gcacccctcc	agaacccagt	ttcatccttg	420
taggtttttc	craagcagga	tttgacacaag	tggcgtgttt	tcttaagtat	ttattttgca	480
ggccatttac	tcggcatggc	tattttttaca	gtgggtaagg	agcanggcta	aaaataactt	540
agctcataac	cagacagggt	ctgcatttga	cattacgngg	nattcatttg	catcccatth	600
ggtcgccctt	ctggttaacn	ggtagaatnn	aagaaagctc	acccgaa		647

<210> 244

<211> 1321

<212> DNA

<213> Homo sapiens

<400> 244

gcgggggggg	ggaggagggg	gaggagggag	cggagatctc	ggggctcgga	gccggccgcc	60
gctccgctcc	gatcgctgtg	gggcttggtt	ttttgggggt	gggggggcgg	gggggctcag	120
atatggaggc	aatggggagc	caaggcacct	cgggcagcgc	caacgactcc	cagcacgacc	180
ccggtaaaat	gtttatcggt	ggactgagct	ggcagacctc	accagatagc	cttagagact	240
attttagcaa	atttgagaa	attagagaat	gtatggctcat	gagagatccc	actacgaaac	300
gctccagagg	cttcgggttc	gtcacgttcg	cagacccagc	aagtgtagat	aaagtattag	360


```

gtcagcccca ccatgagtta gattccaaga cgattgaccc caaagttgca tttcctcgtc 420
gagcgcaacc caagatggtc acaagaacaa agaaaatatt tgtaggcggg ttatctgcga 480
acacagtagt ggaagatgta aagcaatatt tccaggyagt tkgcaagggt gaagatgcaa 540
tgctgatgtt tgataaaact accaacaggc acagagggtt tggctttgtc acttttgaga 600
atgaagatgt tgtggagaaa gtctgtgaga ttcatttcca tgaaatcaat aataaaatgg 660
tagaatgtaa gaaagctcag ccgaaagaag tcatgttccc acctgggaca agaggccggg 720
cccggggact gccttacacc atggacgcgt tcatgcttgg catggggatg ctgggtgagt 780
ctggacagga ccgcagggtca ccatggactg ggagggttat ggaggcctct actcccaact 840
gggtcaccta ccagtggggc aaactgcttc acctttctaa gcctcagttt ccttgtctgt 900
agatgaggat gataattccc cgttccaaga cagttgtgat gattaagtgt ggggtgtgtg 960
gtgtgcatgc atgtgtgtgt gtgtgtgtgt gtgtttgtat ttataatatt gccccatgcc 1020
tggttatatg gatatgttag actattttct ctcttttcca tctccttcc caaaagaagg 1080
aaaagtcccc ctctatctgc ctcagccctc tcatctgagt gggagttytt aagatgtaag 1140
gactcctggc tgacttgact tgtgtgggct aaggctacgt tttctaaaac ttgggagagg 1200
agggaagtgg taagggtggg cgataatcct gtctatttaa atgattaaca tttttctctt 1260
gggatatcaa aatttgcatt taaatggatg ttttaaatag cctgttttac tctttatttg 1320
c 1321

```

<210> 245

<211> 1084

<212> DNA

<213> Homo sapiens

<400> 245

```

ggatggcgct acgtctgctg cggagggcgg cgcgcgaggc tgcggcgggc gcgctgctga 60
ggctgaaagc gtctctagca gctgatatec ccagacttgg atatagttcc tcatcccatc 120
acaagtacat ccccgaggag gcagtgcttt atgtacctgg aaatgatgaa aagaaaataa 180
agaagattcc atccctgaat gtagattgtg cagtgtctga ctgtgaggat ggagtggctg 240
caaacaaaaa gaatgaagct cgactgagaa ttgtaaaaac tcttgaagac attgatctgg 300
gccctactga aaaatgtgtg agagtcaact cagtttccag tgggtctggc gaagaagacc 360
tagagaccct tttgcaatcc cgggtccctc ctccagcct gatgctacca aagggtgaaa 420
gtcctgaaga aatccagtg gcagtggtg aagaaaccct gaaggctcgg cctcaagtag 480
gtctctttct agatgcagtc cgtttttgga ggaraagact ttccagccac ataggtgcam 540
caagtartaa agaaaccctg gatawtctct acgcccggca aaagattggt gtcatagcga 600
aagcctttgg tctccaagcc gtaratctgg kgkacattga ctttcgagat ggarctkggc 660
tgcttagaca gtcacgagaa ggagccgcca tgggcttcac tggtaagcag gtgattcacc 720
ctaaccaaat tgccgtggtc caggagcagt tttctccttc ccctgaaaaa attaatggg 780
ctgaagaact gattgctgcc tttaaagaac atcaacaatt aggaaagggg gcctttactt 840
tccaagggag tatgcatgac atgccattac tgaagcaggc ccagaacact gttacgcttg 900
ccacctccat caaggaaaaa tgatctgtta aatgaagctg tcatcaggct aaagggtatt 960
gaagctgcag agggatcaac ttgtgcttgc cagaggacgc caatgaagtt tgaaacacca 1020
acaatcagag attttgtttc tgttcctcat taaatcatga gcttttgtgc cgagaaaaaa 1080
aaaa 1084

```

<210> 246

<211> 1776

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1748)..(1748)

<223> n equals a,t,g, or c

<400> 246

```

agccactgtg cccagcctcg gctcaggttt ttmaatacag tcttgacctt ggcattcagt 60
atcctcacag catggttcta attaaacttt tagctctatt tcccttttcc tgctccctct 120
ctctacaact agtctttctc tgattgcccc gccctcaacc catctaaact agacccagg 180
gaagcacctt ggtcccttcc ctctctccca ctcaccatcc aaccaatcac cagagcctgt 240
acattctata ttttcaacat cgattcaatt gtctacttct ttctagcctg ccctctctga 300
ctgggactcc ttgagccagc ctgatcacc caatccatcc ctcacactgt gcccatcttt 360

```

ctgaagtagg	aatctgatca	caccamcctg	ctaaaaacac	tctggttctc	cccacggcat	420
gtgggtgccct	tgtatagctg	gcaaagcctt	gcatggcacg	gccccagcct	gtgcttcaac	480
tcaattgccc	gactctctcc	agctctgctg	agccaccta	gtcacagatg	gtttctcctc	540
tcattctctgc	tctcttccat	gtgccatttc	tgtggcttgg	aatgtttctc	cctcattctc	600
tttctggccc	tttcccgcca	caccttagac	gtgcatcttc	ctctcgaaaa	cctctagtga	660
agcctcccag	ggccaggcag	taccctcctc	tggcttcttc	tggatacaga	ggaagaatct	720
gagcatcgat	tctccatctc	agcaggcctc	tgtgtgcctg	ctgactccga	ctagaccaga	780
gatccgtaag	gacagggatc	gagttttttt	tcttttaatk	caactgcctc	aaaatcctct	840
gtgcattacc	tattcatcct	cttctctccc	ttaacctgaa	ccagtgatct	tactgtctcc	900
atcattgttt	ttttcttttc	ttttcttttc	tttttttttt	ttgaggtgga	gtctggctct	960
tcaccagggc	tggagtgcag	tgatgcgac	tcgactcact	gcaacctcca	tctcctgggt	1020
tcaagcgatt	ctctgcctc	agcctcccca	gtagctggga	ttacaggcat	gcgctaccat	1080
ccccaaactaa	tttttgccct	cataattytg	ccttttstag	aatgtcatat	aggtggaatt	1140
actcagtagt	ctgccttttt	cagattggct	tctttcactt	agtaatatgs	tygttttttg	1200
agacaggggc	ttgctctgtc	gcccaggcta	gagtgtgggt	gtgcgatctt	agctcactga	1260
aacctccacc	tcccagggtc	aagtgaytct	sctgcctcag	cctcccagat	agctgggact	1320
acaggcacgt	gccaccatac	cgggctaatt	tgtggatttt	tagtacagac	gsggtttcgt	1380
catgttggcc	agtgtgytgt	tgaattcctg	acctcaagtg	atccacctgc	ctcagcctcc	1440
caaagtgttg	cgattacagg	tgtgagccac	tgcgccaagc	ctcatttagt	aataygcatt	1500
taaaactttct	ccatgkcttt	aatggcttga	tagctcattt	atttttatca	wggaatattt	1560
cattgtctgg	atggaccaca	gtttatttct	ccattcacct	actgaaggac	atctcggttg	1620
cttctaaagt	ttggcaatta	tgaataaagc	tgctataacc	atcaagtgca	ggtttttgtg	1680
tggacctatt	atcaactaat	tcgggtaaat	ctcaaggagt	gcaattgctg	gatccacagt	1740
aagagtgngt	ttagttttaa	gtgcttggcc	attttc			1776

<210> 247

<211> 784

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)..(1)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (6)..(6)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (32)..(32)

<223> n equals a,t,g, or c

<400> 247

ngagtntaat	tgctggatca	cacagtaaga	gngtggttag	ttttaagtgg	ctgtgccatt	60
ttgcattccc	accagcaatg	aatgagagtt	tctgttgctc	cacattctca	ctaccattcg	120
gtgttgcag	tgttttgcag	tttggccatt	ctagtaggtg	tttacatggt	atctagtcatt	180
ttgaatgggc	atatgatgtg	gaacatcttt	ttttttttat	tttwtatta	ttatacttta	240
agtttttaggg	tacatgtgca	caaygtgcag	gttwgttaca	tatgtataca	tgtgccatgy	300
tgggtgtgctg	cacccaytaa	ctcgtcatyt	agcattaggt	atatctccya	atgctattgg	360
aacatctttt	catgtgttta	tttgccatct	gtatatcttc	cctgatgagt	tggggatgca	420
ttctttccat	ctcagagtcc	ccagaaacta	acatagcagt	tggtacagag	ttgggtgctca	480
acaaacatca	gcttaggaac	tatgtcctat	gtttttttgt	tttttttttt	ttttaaaaag	540
gaatgtgagc	tgttcccaaa	acgtatgtcc	ttcccccatg	cctctaccct	gcccttccac	600
aaactttctg	atcttcagca	cacactaccc	aaccatcaag	gctgagactt	cccgtggcca	660
gcagtgtctc	atgctggctt	caagcccccac	agcactgctt	ttttcaactt	ctcttgggt	720
ttagactgtc	tttagcccag	caagagaatt	cgatatcaag	cttatcgata	ccgtcgacct	780
cgag						784

<210> 248
 <211> 699
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (12)..(12)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (30)..(30)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (46)..(46)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (66)..(66)
 <223> n equals a,t,g, or c

<400> 248
 gggtcatgct tnaaccccat ttgctggatn ctgctttgac cctgtntccc tgtactggtg 60
 ttatgngaatt cctggcacac attgctatcc cactctgaga ggmcwtgagc aaagaamccc 120
 cagtrgcaga agccacattg tgctcaggtc ttagttctaa caaacacccat tccccattaa 180
 aaggaaccag gctccttaga gaaatggatg attccagggc tgtggcaggg taggtacaag 240
 atgaacctaa agtgtcgttt tataccagaa agtaagaaa tattaaagtg tttaaaaaag 300
 tgatgggagc atatcacaag gattcagaag ggataccaac tggctaaatc tggaacaatt 360
 tgatcaccaa agtaagtaca ataataaatt ctaagctatt gaagtaaagg catttattat 420
 gtgtagtaat aataaataga taatgagaga gaaatgagga ctcatgctta cagtataatg 480
 ccaggagctg actggcataa atgtggaagg aaggctggag tgggaaaatt attattttgc 540
 aaccatcatg gtaattacca gatcagataa ggatcaacag atgccaaatc tagggcaaat 600
 ttgatgagga gcagaatatt tgcactgtct ttgagagttt ctcccagaga tcacttattt 660
 gttgtaaaaa aaaagaaaaa aaaaaaaaaa aaactcgag 699

<210> 249
 <211> 774
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (618)..(618)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (715)..(715)
 <223> n equals a,t,g, or c

<400> 249
 gtctacctcc gggctgaaac gtcaccatgc ctccccacag acagacggat ggacagatgg 60
 gcctccctgc acctgctctg tgggtgtggg ggctcctgct cagcagcagt ttccagaccc 120
 ttctccctgc tttcccaag ccaccgcct tgaatctggg gtgctctacc agacccatcc 180
 cctcatttct aaagatttga gccactagtc gtgtccctct ccctcagaaa tgcttgggtg 240
 acacttggct gctttcaact cttccacca tctgcctctt ggtctcatct ttacctctg 300
 cttaaaggctc tgacccccac ccccgccacg ccatggggca ccccatgggtg gtgcgtcctt 360

```

gggagcagct ctgtcccttt ccccggtggcc tttgccccgc ctctatgac ttcgattccc 420
acctgtcccc gaccctggg accactgacc gggcccgatc accctgtcac tgccctgtca 480
tctgcttacc ccacacggtg ctctgctgac ccagggtcttg ctgtctccca ayagccccac 540
gaggtcttcc gtcgctcctg gacactrmag gctgagcccg ctgccccgcc gcctccatga 600
ggaaggcttt tcctctgnga gccccaggcc accctttccc tcctttaagt aattacttaa 660
gtcccttgcc agggccctcc cagtaccctt tctaaagaca cccctgcccc agcanctgc 720
aggctcctgc tccactttcc tctcaggccc tcgtcgctgt ggtgctgcct ttga 774

```

<210> 250

<211> 1396

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1187)..(1187)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1325)..(1325)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1327)..(1327)

<223> n equals a,t,g, or c

<400> 250

```

cctcgagcca tgtgtccagg tggggcagat catggagggc gccaggtgc ggtgctgagg 60
ctgagcatgc actggtggg gaggtgggc agagcaggag gaaatccctt gttctccgga 120
gctggagagc cagaaagagc cctgcagcct gggcctcatc atcacacctc gccctcaagg 180
cctccaggca cagcatccac tgccagcctc tgctcctgcc tctgaggggtc tgtctccaag 240
gtcttttggg ggctgcccc gctccccaa cacagacagc accagagctg ggcccacctg 300
tgaggtgctg agttccccat ctgagagact gtgcgagcag aggcaggag gcgcttgatg 360
tcggtatggg aaagagacagg ggaggggtgt ggggctcagg gccccgccag gtgaaggaaac 420
aagcttgga ggggtgcctt atgtctgaga gttggggaga caccaccaag cccagatgg 480
rcctcgaatg ccaggcaggg ccaagctggg cccagaagtg ggawggwtcc cttggctgcc 540
ccaggaaatg aggttcggg gcaagaatcc agcctgggt ggttgaagtc catccaagt 600
ctccctcccc acgaggctcc tgcatatgcc aggaatggg ctggattcca gattccaagc 660
ctggcsgccc agccctatc tgggaccca gccagagcc cccaggcctg gcctccaacc 720
tggccccagc ctgaggggag ctgaattcag agaatcctgt cctaggagcc agaagcggg 780
gagggaggra gggcgccct gtctgggtg caggcccggg ggctgggggy tgcccccccg 840
tctgggtcag ccgagctgc aaaccggccc tggtgagtc atgsgcctc catctccagg 900
gcctggcttg aggtggggaa tagcagttag gttggacatc caggcacctg aggggtgggca 960
gggtccctg cggctggggg ggccagtggc acctgggtgt tgccccctg caccacagcc 1020
ctttggcccc caagtctctg ccacctccct ggggttctgc tcccatattc ctacacacca 1080
gcacagaacc cagcatgtct cctgtagaca cctgcatata aacctgact cacacacaca 1140
cacacacaca cacacacgca cacatgcagg ccaggctcct cggccangtc accctaccgg 1200
cagagctcta gacatttctg gcctctgggt actattcttc aggcagctca ccctgcaagt 1260
ctttatttag cacctactgt gtgccaggca gtggtacagc aagggcagaa gccccacctc 1320
caagnanctg aaccctgcc gtggcagaga cagaaaacaa aggcagcacc acggcgacga 1380
gggctaaaga gaacgc

```

<210> 251

<211> 1397

<212> DNA

<213> Homo sapiens

<400> 251

```

tcgaccacag cgtccgctga attgcggccg tatgcggggc tctgtggagt gcacctgggg 60

```

ttggggggcac	tgtgccccca	gccccctgct	cctttggact	ctacttctgt	ttgcagcccc	120
atttggcctg	ctggggggaga	agaccgcgca	gctgcttgag	tttgacagca	ccaacgtgtc	180
cgatacggca	gcaaagcctt	tgggaagacc	atatacctcca	tactccttgg	cggattttctc	240
ttggaacaac	atcactgatt	cattgggatcc	tgccaccctg	agtgccacat	ttcaaggcca	300
ccccatgaac	gaccctacca	ggacttttgc	caatggcagc	ctggccttca	gggtccaggc	360
cttttccagg	tccagccgac	cagcccaacc	ccctgcctc	ctgcacacag	cagacacctg	420
tcagctagag	gtggccctga	ttggagcctc	tccccgggga	aaccgttccc	tgtttgggct	480
ggaggtagcc	acattgggccc	agggccctga	ctgccccctca	atgcaggagc	agcactccak	540
cgaacgatga	atatgcaccg	gccgtcttcc	agttggacca	gctactgtgg	ggctccctcc	600
catcaggctt	tgcacagtgg	cgaccagtgg	cttactccca	gaagccgggg	ggccgagaat	660
cagccctgcc	ctgccaagct	tccccctctc	atcctgcctt	agcatactct	cttccccagt	720
cacccattgt	ccgagccttc	tttgggtccc	agaataactt	ctgtgccttc	aatctgacgt	780
tcgggcttcc	ccaggccctc	ggctattggg	accaacta	cctcagctgg	tcgatgtctc	840
tgggtgtggg	cttccctcca	gtggacggct	tgtccccact	agtcctgggc	atcatggcag	900
tggccctggg	tgccccaggg	ctcatgctgc	tagggggcgg	cttgggttctg	ctgctgcacc	960
acaagaagta	ctcagagtac	cagtccataa	attaaggccc	gctctctgga	gggaaggaca	1020
ttactgaacc	tgtcttgctg	tgcttcgaaa	ctctggaggt	tggagcatca	agttccagcc	1080
ggcccccttca	ctcccccatc	ttgcttttct	gtggaacctc	agaggccagc	ctcgacttcc	1140
tggagacccc	caggtggggc	ttccttcata	ctttgttggg	ggacttttga	ggcgggcagg	1200
ggacagggct	attgataagg	tccccttggg	gttgcttctc	tgcattctcca	cacatttccc	1260
ttggatggga	cttgcaggcc	taaagtagag	gcattctgac	tggttgggctg	ccctggaagg	1320
caagaaaata	gatttatattt	ttttcamaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	1380
aaaaaaaggg	cggccgc					1397

<210> 252

<211> 1368

<212> DNA

<213> Homo sapiens

<400> 252

ctgaattgcg	gccgtatgcg	cggctctgtg	gagtgacact	gggggttggg	gcactgtgct	60
cccagccccc	tgctcctttg	gactctactt	ctgttttcag	ccccatttgg	cctgctgggg	120
gagaagaccc	gccagctgct	tgagtttgac	agcaccaacg	tgtccgatac	ggcagcaaaag	180
cctttgggaa	gaccatatcc	tccatactcc	ttggccgatt	tctcttggaa	caacatcact	240
gattcattgg	atcctgccac	cctgagtgcc	acatttcaag	gccaccccat	gaacgacctt	300
accaggactt	ttgccaatgg	cagcctggcc	ttcaggtcca	ggccttttcc	agggtccagcc	360
gaccagccca	acccccctgc	ctcctgcaca	cagcagacac	ctgtcagcta	gagggtggccc	420
tgattggagc	ctctccccgg	ggaaaccggt	ccctgttttg	gctggaggta	gccacattgg	480
gccagggccc	tgactgcccc	tcaatgcagg	agcagcactc	catcgacgat	gaatgtgcac	540
cggccgtctt	ccagttggac	cagctactgt	ggggctccct	cccatcaggc	tttgcacagt	600
ggcgaccagt	ggcttactcc	cagaagccgg	ggggccgaga	atcagccctg	ccctgccaaag	660
cttccccctc	tcatcctgcc	ttagcatact	ctcttcccca	gtcaccattt	gtccgagcct	720
tctttggggtc	ccagaataac	ttctgtgcct	tcaatctgac	gttcgggggt	tccacaggcc	780
ctggctattg	ggaccaacac	tacctcagct	ggctgatgct	cctgggtttg	ggcttccctc	840
cagtggacgg	cttgccccca	ttagtctcgg	gcacatggc	agtggcctgg	gtgccccagg	900
gctcatgctg	ctagggggcg	gcttgggtct	gctgctgcac	cacaagaagt	actcagagta	960
ccagtccata	aattaaggcc	cgtctctctg	agggaaggac	attactgaac	ctgtcttgcct	1020
gtgcctcgaa	actctggagg	ttggagcatc	aagttccagc	cggccccctc	actcccccat	1080
cttgcttttcc	tgtggaacct	cagaggccag	cctcgacttc	ctggagaccc	ccagggtgggg	1140
cttcccttcat	actttgtttg	gggacttttg	aggcggggcag	gggacagggc	tattgataag	1200
gtcccccttg	tggtgccttc	ttgcactctc	acacatttcc	cttggatggg	acttgcaggc	1260
ctaaatgaga	ggcattctga	ctggttggct	gccctggaag	gcaagaaaat	agattttattt	1320
tttttcaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaaaa	aaaaaaa		1368

<210> 253

<211> 1763

<212> DNA

<213> Homo sapiens

<400> 253

ccacgcgtcc	gattcaagtg	atcaagattt	taaaatatga	aaagaaactg	gccccaaatgt	60
------------	------------	------------	------------	------------	-------------	----

gctttttaat	gatattcacc	ttcctggctc	gttggatgcc	ttatatcgtg	atctgcttct	120
tggtgggtta	tggtcatggt	cacctgggtc	ctccaacaat	atctattgtt	tcgtacctct	180
ttgctaaatc	gaacactgta	tacaatccag	tgattttatgt	cttcatgatc	agaaagtttc	240
gaagatccct	tttgcagctt	ctgtgcctcc	gactgctgag	gtgccagagg	cctgctaaag	300
acctaccagc	agctggaagt	gaaatgcaga	tcagacccat	tgtgatgtca	cagaaagatg	360
gggacaggcc	aaagaaaagt	gactttcaac	tcttcttcca	tcatttttat	catcaccagt	420
gatgaatcac	tgtcagttga	cgacagcgac	aaaaccaatg	gggtccaaagt	tgatgtaatc	480
caagttcgtc	ctttgtagga	atgaagaatg	gcaacgaaag	atggggcctt	aaattggatg	540
ccacttttgg	actttcatca	taagaagtgt	ctggaatacc	cgttctatgt	aatatcaaca	600
gaaccttggt	gtccagcagg	aaatccgaat	tgcccatatg	ctcttggggc	tcaggaagag	660
gttgaacaaa	aacaaattct	tttaattcaa	cgggtgcttt	acataatgaa	aaaaccactt	720
gtggcacacg	atgggcatct	aacatcatca	tcttctaagt	tgttggagat	tttcatttca	780
aatatatttt	ttaaattact	ctattttcca	aaacacgtaa	tgcatttttc	tcgaaaatac	840
cttactgtaa	aaataactgt	cgcgtacaca	tgtgtgaagt	agctagaaca	tactgaattt	900
ttttttgtac	tgttggactc	tattcagtgt	catgtcctat	atctgatcaa	gttatcaagg	960
agataattct	agaatgaaaa	agaaaatcct	cttggtggaa	acaaaagacg	ttttatatgt	1020
gcagtatgac	aaagaggagt	ttcagagaca	actttgaatc	cttgtcagcc	tgtagaccag	1080
caccagagga	atctacaagg	caaactccca	tatatattgt	tcccccaaat	tgctgccctt	1140
acagactcaa	agctcttttt	ctttgttttg	ttgtttctct	aaaaatttac	tgttctttgt	1200
cgatgctata	taagccaggg	agttctaaga	cgccagctct	ttgagatttg	ctcattcccc	1260
tgtatttccc	acatatatat	tacatatacc	cgctaataaa	tttatgtttg	tttttctctt	1320
gtcaatctgt	cttttgttat	aggggcccc	gccagggaac	ctaaagtggg	tagaaggaaa	1380
aattattttt	tctttcccta	caaactgaac	atggattatt	agaactcaag	gttttcattg	1440
acaatataga	aaagaaacac	tgaatcattt	tattttattg	cccaattttt	atttcttata	1500
tgactctagt	gtttcatctt	cataattaat	catgtttgaa	ggattttctg	gtgactcagc	1560
agcctgttaa	agaaggatga	accaaagaaa	acatttccat	aaatgtgctt	ttaaaaatca	1620
agtgatttgc	tggttctgct	gcagtatgta	gtcgaagaat	aaattagtaa	attgcttctg	1680
agggtctgaa	attgaataaa	gtaatggctt	tgtatttcta	taaaaaaaaa	aaaaaaaaaa	1740
aaaaaaaaaa	aaaaaaaaaa	aaa				1763

<210> 254

<211> 1274

<212> DNA

<213> Homo sapiens

<400> 254

gcccacgcgt	ccgctgttgc	tcaaaggaaa	taggagttgg	tgtgcttgtg	accaaggggt	60
tacacttmca	gcttttataa	ttctccttta	catgtgtctc	gtgttttgkt	ttgtgttttg	120
gtttctgttt	tttattttta	ttcccacatt	gggcacaaga	atcagaatat	ggatagctag	180
tttaagaaac	ttttgtgggt	gcactgtagc	atagatgaca	gaatttgatg	ttcccccat	240
ctccaattca	gttcagggca	ttccacagtt	aaacagaaat	gggaacgtgg	ggctcttata	300
aatgaatggg	cgctcacagt	tttggttttc	agctcttcat	gtctgtaagt	gtgctttggg	360
graggctatg	tctgtatgg	cgattctcag	ttatcacatt	tgctctctct	cccactacct	420
tcatgamcat	tcagtgtctg	tcgcaactgca	gttagagaga	agggacggac	agttgggtgac	480
actcagccac	attgctactt	ttatctgttc	tggttaagaag	ttagatagat	ggtagattga	540
agcaattggg	tagaatttag	tgggggaata	tttatgagtt	gctgtgtttg	ttgattagtt	600
ccatctcttt	cccattttaa	ctgagaattg	attatatata	gctctaagta	tatagggtatt	660
taaacaaccc	cacaagcggc	tgtatcagta	acatttatta	attccactat	agtgagggag	720
gattttccatt	ctaaatacct	tattttgagg	gatttataaa	acttagttgt	aaaagagaaa	780
gcccacatag	tgggaataaa	ttgcttcagc	catttttagt	atttgagagc	actagggag	840
atgttttagta	gctgtgtgga	tgcctttttt	cacaccctgt	ctattgaatg	ctgcatccat	900
tcacgaagtt	aaatgttaca	tgcagttagt	ccttaagtgt	gactggatct	gtacttttgt	960
tttggaattaa	aacattttaa	gatttttgaa	gtgcagctac	tccccacgtg	catttgmtac	1020
acataaaaagt	catactgtgt	gtgcacaaag	agtacatgga	ttttccagca	taytgcttta	1080
aaaaattata	taaactgtta	aaatattaac	acctcaggct	acctgctgta	ttctgtccca	1140
ttgaccctctg	gaattggatt	tactgcaagt	gattgataat	tcaattatgt	ggcttttccc	1200
ctttaatctt	gccattttaa	ttacagtaga	aagacaaaat	caagtaaaat	aaagtgttag	1260
ataatagaaa	gagt					1274

<210> 255

<211> 2409

<212> DNA

<213> Homo sapiens

<400> 255

ccacgcgtcc	gcttcgacga	cgacacctgc	agaagtgcgg	acccgccatg	ccgcgccacc	60
tctcgggact	gctcctgctg	ctctggccgc	tgctgctgct	gctgccgccg	acccccgccg	120
cccccgggcc	cctggcccgc	ccgggtttgc	ggaggctggg	cacgcggggc	ccagggggca	180
gtcccgggcg	ccgccctggc	tctgctgtcc	ccaccgcgc	gccctattcc	ggggccggcc	240
agcccgggcg	ggcccagagc	gcaggtgttt	gcaggagcag	gcccttggat	ttgggtgtca	300
tcacgcgatg	ttcccgagc	gtgcggcccc	tgaggttcac	caaagtgaag	acctttgtct	360
cccagataat	tgacactctg	gacattgggg	cggcagatac	acgggtggca	gtgggtgaact	420
atgctagcac	cgtgaagatt	gagttccatc	tccagaccac	ctcagataaa	cagtccttga	480
aacaggctgt	ggctcggatc	acaccctgt	ctacaggcac	catgtccggc	ctggctatcc	540
agacagcaat	ggatgaggcc	ttcacggtgg	aggcaggagc	tcggggggccc	acttccaaca	600
tccctaagggt	ggccatcatc	gtgacagatg	ggaggcccca	ggaccaggtg	aatgaggtgg	660
cggctcgggc	ccgggcatct	ggtattgaac	tctacgccgt	gggcgtggac	cgggcagaca	720
tgaggtccct	caagatgatg	gccagcgagc	ccctagacga	gcacgttttc	tatgtggaga	780
cctacgggggt	cattgagaaa	ctctcctcta	gattccagga	aaccttttgc	gctctggacc	840
cgtgtgtgct	tggcacacac	cgggtgcagc	acgtgtgtgt	cagtgtggg	gaaggcaagc	900
accactgtga	gtgcagccaa	ggctactcct	tgaacgccga	tcagaagacg	tggtcagcta	960
tcgataagtg	tgctctgaac	actcacggtt	gtgaacacat	ctgtgtgaac	gacagaactg	1020
gctcttacca	ctgtgagtg	tacgaagggt	acaccctgaa	ccaagacagg	aagacttggt	1080
cggctcaaga	ccaatgtgcc	tttggtacac	atggctgcc	gcacatttgt	gtaaatgaca	1140
gagatgggtc	ccatcactgt	gaatgctacg	agggttatac	tctgaatgct	gacaacaaaa	1200
cgtgttcagt	tcgcagcgag	tggtgtgggg	gctgcgacgg	ctgccagcac	ctgtgtgtgg	1260
acgacggggc	cgcggcctat	cactgcgatt	gtttccccgg	ctacaccctg	accgaagacc	1320
ggaggacgtg	cgcagccatt	gaagaagcac	gaagactcgt	ctctacagaa	gatgcttgtg	1380
ggtgtgaagc	caccctggcc	ttccaggaga	gggccagctc	atatctgcag	agactgaatg	1440
ccaaactcga	tgatattttg	ggcaagttgc	aagcagatgc	gtatggacaa	atacatcggt	1500
gaattactca	gattttttcac	ctggatatac	ggagagcttg	gtctatttta	tattttttgca	1560
tacttcaatg	ttcctgctaa	taattttgcc	ttgcaaagtc	tttaatatata	ctggataagt	1620
agtatgagga	tcttctagag	aatcagtagg	acataaacgt	tcacatcctt	aagagcaaac	1680
tttagtgtct	ctaagctatg	actgtgaaat	gattcatggg	gaatagaatg	aaaagtgttg	1740
tatctcttta	tttaccat	gagccattta	attttttaaat	gtttatatata	gtaagataac	1800
cattcttaca	atgggaactt	tttatctatt	ttctcttgat	agtattttata	gtataaacca	1860
gttttattat	tgagagtgtg	aattatacaa	gtattttacac	ataaaaaagt	tcatataatt	1920
gaggtaaata	taattttagaa	ctgtttcttt	aatgctttgt	tttttgctca	ctttttgctg	1980
gaatatcact	gaagctgtga	tcaggggatt	ataacacata	tcaagatcaa	gtgaacacta	2040
catgaaatat	tgtaagaaac	acataactaa	agacttttagt	tttgaattaa	gtgttataac	2100
ttctttaccaa	gtttttggtaa	aaaatcctac	attatcttta	ctgttttact	ttaggattca	2160
atcaagaaaa	ttatatactt	ataaatattg	atctaaaaag	ttacaacaaa	acccaatgtc	2220
gccatttttaa	agttaagct	taacttttct	tcacttacat	atthagtata	tgtattttat	2280
ttttccgctt	gaaagcttat	agctcttagg	agaaaacat	ccttttaaatt	gtgactactc	2340
attttttctg	tttgtattgt	cttttagtata	ataaaaagtt	actatcttta	taaaaaaaaa	2400
aaaaaaaa						2409

<210> 256

<211> 876

<212> DNA

<213> Homo sapiens

<400> 256

caggtaaccg	tccggaattc	ccgggtcgac	ccacgcgtcc	gcttcgacga	cgacacctgc	60
araagtgcgg	acccgccatg	ccgcgccacc	tctcgggact	gctcctgctg	ctctggccgc	120
tgctgctgct	gctgccgccg	acccccgccg	cccccgggcc	cctggcccgc	ccgggtttgc	180
ggaggctggg	cacgcggggc	ccaggggggy	ktcccgkkg	ccgccctgkc	tctgctgtcc	240
ccaccgcgc	gccctattcc	ggggccggcc	agcccgggcg	kgcccagagc	gcaggtgttt	300
gcaggagcag	gcccttggat	ttgggtgtca	tcacgcgatg	ttcccgagc	gtgcggcccc	360
tgaggttcac	caagtggaag	acctttgtct	ccagataaat	tgacactctg	gacattgggg	420
cggcagatac	acgggtggca	gtggtgaact	atgctagcac	cgtgaagatt	garttccawc	480
tccagaccca	ctcagataaa	cagtccttga	aacaggctgt	ggctcggatc	acaccctgt	540

ctacaggcac	catgtccggc	ctggctatcc	agacagcaat	ggatgargcc	ttcacgggtg	600
aggcaggagc	tcggggggccc	acttycaaca	tccttaaggt	ggccatcatc	gtgacagatg	660
ggaggcccca	ggaccagggtg	aatgargtg	cggctcgggc	ccgggcatct	ggtattgaac	720
tctacgccgt	gggcgtggac	csggcaraca	tggagtcctt	tcaagatgaa	tgccagcgga	780
agcccctaga	cgagcacggt	ttctatgtgg	agacctacgg	ggtyattgag	aaaccttcct	840
ytagattcca	ggaaaccctt	ttgcgctctt	ggaacc			876

<210> 257

<211> 1586

<212> DNA

<213> Homo sapiens

<400> 257

tttattatac	taaagmcaat	acaamcagaa	aaaatgagta	gtcacaat	aaaggatggt	60
tttctcctaa	gagctataag	ctttcaagcg	gaaaaataaa	atacataac	taaataatgta	120
agtgaagaaa	agttaagctt	aaactttaaa	atggcgacat	tgggtttgtt	gttaactttt	180
tagatcaata	tttataagta	tataattttc	ttgattgaat	cctaaagtga	aacagtaaag	240
ataatgtagg	atttttttacc	aaaacttgg	aagaagttat	aacacttaat	tcaaaactaa	300
agtcttttagt	tatgtgtttc	ttacaatatt	tcagttagtg	ttcacttgat	cttgatatgt	360
gttataatcc	cctgatcaca	gcttcagtga	tattccagca	aaaagtgagc	aaaaarcaa	420
gcattaaaga	aacagttcta	aattatattt	acctcaatta	tatgaacttt	tttatgtgta	480
aatacttgta	taatttacac	tctcaataat	aaaactgggt	tatactataa	atactatcaa	540
gagaaaatag	ataaaaagtt	cccattgtaa	gaatgggtat	cttactaata	taaacattta	600
aaaattaaat	ggctcaattg	gtaaataaag	agataccaaa	cttttcattc	tattcccat	660
gaatcatttc	acagtcatag	cttagagaca	ctaaagtttg	ctcttaagga	tgtgaacggt	720
tatgtcctac	tgattctcta	gaagatcctc	atactactta	tccagtaata	ttaaagcatt	780
tgcaatggca	aattattagc	aggaacattg	aagtatgcaa	aaatattaaa	tagaccaagc	840
tctccgtata	tccagggtgaa	aaatctgagt	aattcaacga	tgtattttgtc	catacgcatc	900
tgcttgcaac	ttgcccaaaa	tatcatcgag	tttggcattc	agtctctgca	gatatgagct	960
ggccctctcc	tgggaaggcca	gggtggcttc	acaccacaa	gcattctctg	tagagacgag	1020
tcttcgtgct	tcttcaatgg	ctgcgcacgt	cctccggctc	tcggtcaggg	tgtagccggg	1080
gaaacaatcg	cagygatagg	ccgcgggccc	gtcgtccaca	cacagggtgct	ggcagccgtg	1140
cgagccmcca	gcacactcgc	tgcgaaactga	acacgttttg	ttgtcagcat	tcagagtrka	1200
assctcgtag	matwmacagt	gatgggaccc	atctctgtca	tttacacaaa	tgtgctggca	1260
gmcatgtgta	ccaaggcac	attgggtctg	agccgaacaa	gtcttcctgt	cttgggttcag	1320
ggtgtaacct	tcgtagcact	cacagtggta	agagccagtt	ctgtcgttca	cacagatgtg	1380
ttcacaaccg	tgagtgttca	gagcacactt	atcgatagct	gaacacgtct	tctgatcggc	1440
gttcaaggag	tagccttggc	tgcaactcaca	gtgggtgctg	ccttcccat	cactgacacm	1500
cactgtgctg	caccgggtg	tgccaarcac	acacgggwcc	agagcgcaa	agggttctctg	1560
gaatctagag	gagagtttgg	caattt				1586

<210> 258

<211> 1011

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (2)..(2)

<223> n equals a,t,g, or c

<400> 258

cncccttttt	tttttttttt	tttttttttt	tttttttttt	tttttttttt	tttttttttt	60
ttgcagctta	aaagcatttt	attaagcatt	tttggatgtt	gcttcctacc	acttaagaat	120
aaaaaatgca	ttttaataaa	aacaaatcta	tactgaagtc	attttccttt	gtgagaggaa	180
atatgaatga	aatacattca	tacttaaaaa	cagagtattt	tactgccaaa	actttaaata	240
tctcaagagc	ataccacatt	ttaaacacat	tatgggtcatg	tagctatttc	aatattcctg	300
ggagtgggtg	gcaattagcc	tgtctatggc	ttaggatctg	ttccatgct	tgcttcttga	360
gcttcttcta	cctctgagag	tttttcatca	ttttccaatg	tttgctgaag	ttcatggatg	420
gtactaagaa	gaacatgaaa	ctgtttccgt	ctcaattcca	gcttatcttc	aacactttct	480
ttaatgtgtg	aaagatgctc	taattctttt	cccagagcct	ctagttcctt	taatgtctca	540


```

tgctgtctg gatgggtgctg aatcaactttt gccaaagcat catattcttg gcgatttttt 600
cgtattcggtt ttgcttgaag aatttgcttt ttgcactcag caattttttt atgtgctcca 660
gctatgctac attctatttc cttgtaaatt ttttcataat tttccatttc tctgagattc 720
atatcatata ctagtaaagt tttgcccatt gaaaattcac attgagacag cgtgctcagc 780
atacgttgggt actgggtata tccctcttcc tgggacccag agttgcacca tttaatgaaa 840
ctcttcacta gcagattaat tctccgatca tctccagcac catctccatc aatgaggaga 900
cgcttcgcta taattcgctg tcagtcacgg cttccatggc gtgcgcggcg gcggcgcgcg 960
gcaagctgag gcggcggttg gcggcgcgcg cgagggtcaa actcccacaa t 1011

```

<210> 259

<211> 1395

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1338)..(1338)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1382)..(1384)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1390)..(1390)

<223> n equals a,t,g, or c

<400> 259

```

tcgaccacg cgtccgggag ccatggcgcc gtccggggcg ctgctgctgg tgctgctcgt 60
gccgctggcc gccgcgcggc cgggccctac ttccgtcccg gccggggctg ccgcctgccc 120
ctgcgggggg accagctgtc ggggctgggg cgcaggacct acccccggcc gcacgagtac 180
ctgtcccat ctgacctgcc caagagctgg gactggcgca acgtgaacgg ggtcaactat 240
gccagtgcc ccaggaacca gcatatcccc cagtactgtg gctcctgctg ggcccacggc 300
agcaccagt ccatggcgga cgggatcaac atcaagagaa agggggcggt gccctccamc 360
ctgctgtccg tgcaacamkt cytcgaytgg cgccaacgcy ggytctgtga gggggcaack 420
acctgccggt gtsgacgtac gcccatgagc amggcatccc ggacgagacc tgcaacaact 480
accaggctaa ggaccaggaa tgcaacaagt tcaaccagt tggaacatgc acggaattca 540
aggagtgcc ctacatccag aactacacgc tctggaaagt gggtgactac ggctccctct 600
ccggcagggg gaagatgat gcggaaatct atgccacgg ccccatcagc tgcggtatca 660
tgggcacgga gaagatgggt aactacacgg gaggcattca cgcggagtac caggatcagg 720
cctacataaa ccacgtcatt tctgtggtcg gctggggcgt cagcgacggc acggagtact 780
gggttgctcg gaattcgtgg ggggaacctt ggggggagca cggtggatg aggattgtga 840
ccagcaccta taaagacggg cagggcgcca gttacaacct cgctgtcgag gacacctgta 900
cgtttgggga cccatcggt taagggacag gtctcccgag aagagcagt ttatcgtgaa 960
ccataatcag ggggtcctat cgctctgggc actgggttg ttccaccatg gtctgaagg 1020
actggggact ggcatacaac gtgtctgat gctgctcgcg gcccgtgcg cccagaagg 1080
agaaggggcy cctgtcagca cacagcctgc cgcggcgccg gccgggagcg cgctcctggg 1140
gaagagtctg caatgggacg gctgagagcc ccgggcccgc cactgccctg cccagtgtct 1200
gcctggccac cgtgtgatcc gcaaggccca aacgatgtga ctgcaagctt ctctgtccct 1260
gatttggtgt ttcctgtctg gcagctgtgg tccatgatgt ggtgcggaag cccaagcttc 1320
tcaaagctct tacgttgnct gggattcggt gggggggagt cgggggggtg aaggagaaag 1380
cnnnccttgn aagat 1395

```

<210> 260

<211> 270

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature
 <222> (260)..(260)
 <223> n equals a,t,g, or c

<400> 260
 tgtcagcaca cagcctgccg cggcgccgcc gggagcgcg tcctggggaa gagtctgcaa 60
 tgggacggct gagagcctcg ggccggccac tgccctgccc cagtgtctgc ctggccaccg 120
 tgtgatccgc aaggcccaaa cgatgtgact gccaaagctcc tctgtccctg atttggtgtt 180
 tcctgtctgc agctgtgggc catgatgtgg tgcggaagcc caggcttctc aaagctctta 240
 cgttgctggg attcgggtggn ggggartcgg 270

<210> 261
 <211> 2324
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (15)..(15)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (23)..(23)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (36)..(36)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (92)..(92)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (95)..(95)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (107)..(107)
 <223> n equals a,t,g, or c

<400> 261
 cgccaaaccc gcctnttccc cgnngcgtttg ccgtcnttta aatgccagga tcgatccagc 60
 catgataaga tcatttgatg agtttggcca anccncaact tagaatncag tgaaaaaaat 120
 gctttatttg tgaaatttgt gatgctattg ctttatttgt aaccmttata agctgcaata 180
 accaagttac camcamcaat tgcattcatt ttatgtttca gggttcaggg raggtgtggr 240
 aggtttttta aagcaagtaa amcctctaca aatgtggtat gsctgattat gatcatgamc 300
 agactgtgag gactgagggg cctgaaatga gccttgggac tgtgaatcta aaatacacia 360
 mcaattagaa tcactagctc ctgtgtataa tattttcata aatcatactc agtaagcaaa 420
 actctcaagc agcaagcata tgcaagtagt ttaacmcatt atacacttaa aaattttata 480
 tttaccttag agctttaaat ctctgtaggt agtttgtcca attatgtcac accacagaag 540
 taaggttccct tcacaagat cccaagctag cttataatac gactcactat agggagagag 600
 ctatgacgtc gcatgcacgc gtaagcttgg gccctcgag ggatcctcta gagcgccgcg 660
 cctttttttt tttttttcat cttttattta tttattattt ttttttacta aggcacatga 720
 cgtagaaata ttgaggtaca aaatgcaaat ttctgcataa gatttttaag atattcattt 780
 tggaaaatga aggtgaacat catctcccag aatattcagc ttttagcttg ttttttcttt 840

```

tggaccagtt caaccagcaa cttgtaccta gcgatacagt cttccttget cttggacggg 900
acacatctgg ctattttgtc ccagcgggtca gaggatcccc ttgggtactg ctgcaacgcc 960
agttccagaa gtttctgttg attttgagtc cacgggtcct ctgcagaccg agctctctct 1020
tttctcaggc tctcctcgtc gctggactcg ttttgttctg ctatgtcaaa gtccttctgc 1080
cgcttgggtc tggactttct ctctgggtcc ggcttcgctg tagcctccag cagcctggct 1140
ggcttccgcc tccgaggccg ggcacagtg gccccggtct cctgctcacc ggagtctccc 1200
tcctgctcct cctccgctgc caccctctct gcgtcctctc gctgggtgat catgtcatcg 1260
ggcaagggtg tggccgtttt gatgggcctg gaattctgaa ctgtcgattt gagttcggag 1320
agtctaacca ttcttgggga gcagggtcact gaatccttca gttgcttggc tttgggtgtc 1380
acatctgtca cagatcgacc caattcgtgg gcaatctttt cccatcgacc tggagtcctt 1440
cctgggaact taaccatact tcttgtcagt tggtgaggt cctcttctgt ccattcaggt 1500
gcctgttttt tctgtgttct gttcctgttt tccaaccaat catccatttg ttctcaatt 1560
tcctctatgg aagttccatg atcataagac tgaatatatg tagtttctaa aggtgtgtat 1620
acaggaaatt caggttttgg ttttttaact ttcttctgtt tttgaagtgt ttcaagtca 1680
gttctagtca gtgcactctt cttttccttc aatcttgttt ctttataatt agcataaaac 1740
tgcccagcat cctggatgag gtgaggtaat gcttttagtg taaggcaaaa ccaaatcccc 1800
agtttgcatg gaagcaaadc atgccactgt ggtttcatca gcaatcttct attttttctt 1860
gaagcaccga gttttgatac atccacactc ttgctgccag tctttttttt cttttctctc 1920
ttttttctac ttagtagttc atccagttgt ttttccaggt agattgacca aaccacagca 1980
taatgaccca ctgtgagaat aatgaacaag agtaatgcca gctcagcatt gctcattttt 2040
ctcaccgccg tgtagtagaa tacaggctgt cgccaatctg gaagtccatt gatcagaata 2100
tcacataacc tctgccttct ttcatcatcc tttaaaactt cataaatggc caccaattgt 2160
ctaaactgag tttctgcatt ttcattctta ttcttgtctg gatgtaaagt tagtgaaagc 2220
ttacgatatg cttttctgat gtctgcagat gatgcacctt gctgcacccc gaggaactgg 2280
tagaagttga gcggacgcgt gggctgcacc ggggaattccg gacc 2324

```

<210> 262

<211> 585

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (570)..(570)

<223> n equals a,t,g, or c

<400> 262

```

gtttcctgca cctgggtgac cttggcgaaa ctgaggtctc atggagaagc cccggagtat 60
tgaggagacc ccattctcag aaccaatgga ggaagaggaa gatgacgact tggagctgtt 120
tggtggctat gatagtttcc ggagttataa cagcagtggt ggcagtgaga gcagctccta 180
tctggaggag tcaagtgaag cagaaaatga ggatcgggaa gcagggggaa tgccgacctc 240
cccgtgcat ttgctcagcc ctgggactcc tcgctccttg gatggcagtg gttctgagcc 300
agctgtctgt gagatgtgtg gtatcgtggg tacaagggaa gccttcttct ccaagaccaa 360
gaggttctgc agcgtctcct gtctccaggag ctactcctcc aactccaaga aagccagtat 420
cttggctagg ttacagggaa aaccaccgac caaaaaagcc aaagtcctkc acaagtgcc 480
tggtctkcca aaattggagc cttcctccaa tctcaaggga caggacagct ggcaratkgg 540
acaccaacag gacaagacgc tctggtcttn ggcttcgact ggggg 585

```

<210> 263

<211> 4344

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (754)..(754)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (2242)..(2242)

<223> n equals a,t,g, or c

<400> 263

tgagaatcct	tgtggctttg	attcggagtg	tctgaacagg	atgctgatgt	ttgagtgcc	60
cccgcagtgt	gtcccgcggg	cragttctgc	cagaaccagt	gcttcaccaa	gcgccagtac	120
ccagagacca	agatcatcaa	gacagatggc	aaaggggtgg	gcctgggtcg	caagagggac	180
atcagaaagg	gagaatttgt	taacgagtag	gttggggagc	tgatcgacga	ggaggagtag	240
atggcgagaa	tcaagcagcg	acacgagaa	gacatcacc	acttctacat	gctcactata	300
gacaaggacc	gtataataga	cgctggcccc	aaaggaaact	actctcgatt	tatgaatcac	360
agctgccagc	ccaactgtga	gacctcaag	tgagcagtag	atggggacac	tcgtgtgggc	420
ctgtttgccg	tctgtgacat	tcctgcaggg	acggagctga	yttttaacta	caacctcgat	480
tgtctgggca	atgaaaaaac	ggctctgcgg	tgtggagcct	ccaattgcag	tggaattcct	540
ggggatagac	caaagacctc	gacgacctt	tcacagagag	aaaagggcaa	aaagaccaag	600
aagaaaaacga	rgcggcgag	agcaaaagg	gaagggaaga	ggcagtcaga	ggacgagtag	660
ttccgctgcg	gtgatggcgg	gcagctgggt	ctgtgtgacc	gcaagttctg	caccaaggcc	720
taccacctgt	cctgcctggg	ccttggaag	cggnccctcg	ggaagtggga	atgtccttgg	780
catcattgtg	acgtgtgtgg	caaaccttcg	acttcatttt	gccacctctg	ccccaatctg	840
ttctgtgaag	agcaccagga	cgggacagcc	ttcagctgca	ccccggacgg	gcggctcctac	900
tgctgtgagc	atgacttagg	ggcggcacag	gtcagaagca	ccaagactga	gaagccccc	960
ccagctccag	ggaaagcgaa	ggggagagag	cgccggcgga	ggggctggcg	gagagtcaca	1020
gagggcaaat	agcggcaggc	ggccgcttgg	ccggatccag	ggcggttgca	ggcgggccgg	1080
ccctgcctgc	gggagagggc	gagcatgaac	tgcccgagag	gacccagctc	gagccggcag	1140
gacacagacg	tacaggcctc	ctcgggaggg	agcgccctcc	caccactgag	ccatcctcag	1200
cagcgtccgc	tgcgtctgca	ctgatgaccg	tctgagccca	gctcagcggt	cctggacaaa	1260
cagcctcact	cctcagcggt	accggcacac	ttgaatttct	ccgaatgtca	aggttccctc	1320
ccactctatt	tttttagggt	aaagttaatt	ggcatatgga	atgttttaat	ctcctctgaa	1380
atgtgtagcg	taggcttttc	ccaagggtcg	ctagaaactc	gtcttcgcgt	tgcccccttt	1440
ctggctctca	gcgccgtcgc	cactcgggag	aggctgggtg	aggcccggtg	gaggactgac	1500
cctggattcc	tcgaaactgc	cattgtgatc	attactctgc	tctttggaaa	tggtctgtatc	1560
atttttttgt	actaatgtga	attgttcctc	agaaacgctt	cttttccatc	ctagttagaa	1620
gctggccctg	caggtgtgtg	cagcaatggt	gttgtaagat	ttcctcccgt	agttttttct	1680
cctcatggat	ttgaatgaaa	tgccaataac	acgtccactt	tcaacgtgta	gtttacgcgg	1740
agcactttcg	aggcctggcc	gggttgggcc	tacttctcac	ctgggcctat	cttctgaact	1800
cgctaggttc	ttatcaacat	ttgggggata	actttgtata	tttttttcat	ttggcttttc	1860
tttaccagtt	tctgattttt	attctcaata	tatttttgct	aaacctatct	cacaaatcac	1920
caccgactga	agtgtgtgtt	tactgatgcg	gccttgagct	ccatggcgaa	aggagttagc	1980
ttgcaggggc	tgagaccgca	gtctgcttag	agcacaggaa	gtgacaactt	agggagcccc	2040
gtagggcgct	gcaggccccc	gggacccag	cacgtgggtc	taaagagaga	cggagtctag	2100
ctctcctgcc	accagagtag	gcttccatct	cagcactctg	tggtgtgtgt	gatggaagat	2160
gcagtctctg	ctgatcacat	gtgccctctg	ccagggcacc	tactgagagg	tgcggtcctg	2220
ggggtggagg	cctgcctggc	angtgtsgt	gcctcgtag	tgtgttatgg	gcactgggtc	2280
aggccaggta	tgacaccac	tctyctgtga	gatttcactt	tagtttttaa	aagggtccagt	2340
tctacagagt	gagacctatc	tatctgagta	ctacatatgt	tttaagactt	ggttcttttt	2400
ttgagggatc	cctgaccctg	ggaagtctgg	agcaccctga	gaagggggca	ccatgtgtgc	2460
ctttgccccac	gtgtcctgag	gggctgcttg	tctgggaggg	aggagagaga	cattcagcag	2520
cagggtgcttt	tttatggcct	ttctttaaaa	taacctgaag	gggacacatc	catcttgtag	2580
agaagtttac	agaactcccc	ttgaaaactg	ctgctgaggg	tcctgttaaa	ttttctgtgg	2640
catcttttat	gccttggtaa	aaactgcagt	gtctttggac	ctgagagtgg	ctactccgtg	2700
gtttttgtgac	ctgtaagcgt	ggggttcagg	ggtgtgtggc	cctgcagggt	cccacgcctc	2760
cctgagcact	gactggaagt	ttcactgggt	ggtggctgtc	ccttctccca	tcagggtccc	2820
cagcaaaagt	aactacacag	aggacccagg	ggaaacgagc	tgtgtagcca	ctgacttgct	2880
cgcgcggccg	tggcctctga	ggggcactcg	ccggttaaga	cagggtggga	gtagtgtctt	2940
ccagttcaga	ctctaacttc	tcccaagggt	tcctaagaaa	atactggatc	ggctcataga	3000
tttatgtctc	ttatgatgcc	ctaacttgga	agggtgttct	agggacaggg	cgggcagtag	3060
ccccacacac	accttagagt	cgaaggcccc	agggccccgc	tgtaacttgc	ccaaaagatc	3120
ccttcgggca	ggtaaggggac	taccaatgct	tacgtcaaaa	cagcagaatc	ggcttttgag	3180
tgcacttttg	ggagcagata	ttactttatt	tttgtgttgg	acagtagtga	aatcttgtga	3240
tttttaactc	ctttgataat	acttccaaat	tttatgattt	ttctgaagga	aataatgcaa	3300
acatttttaa	tatgtttctc	cccctttcca	aaaactgtta	aactaatgag	caagtaacac	3360
taactttgaa	tgtctctaca	ataccggttg	ataactcagt	ggagccaggc	tttggggtag	3420
cggccctgag	cttgacgggt	ttctcgccac	tggggctgac	cacgccccca	gctgtgaccg	3480

tgggtgtggc	tggtctctcg	ccctgcccag	ctttgttctg	aggacgtggt	gacttcctga	3540
acatcagett	caatcctcca	tcattaatgt	gaagcaaaac	acaaaaaccg	ccccaatccc	3600
tcaggattcc	ttggcatccg	aaaccagcat	ctgcacctaa	acccataccc	acccgtgtgc	3660
gccacaggg	ggatgtgtcc	gaatgggcag	cttaaaatgt	ggtcacctgt	gggggaaact	3720
cttcaggcac	ctgaagttag	aaccacagctg	tccgtcctca	ggccggcctt	tcttccggcg	3780
acaccggtcc	atggctggct	gggtcccctt	cgcagtgttt	gtctgtcttg	acatctaaac	3840
cccggcgtgt	gcagtgccca	tcttccagga	ctaccttatt	ttccagaatt	aaacctgttt	3900
tataattcaa	gttaatgcaa	atgactgtca	gttgccaaat	atcttgatcc	tatgagtgtg	3960
gttgatgact	gtttgttagt	cagtagagta	aaatgctgtg	tccacggggt	gtcacagcct	4020
caccataccc	tggtgaggtg	tgaaatgccc	cgtcagaaat	taaatacaaa	cttaaatgtg	4080
cctattgggt	tctaaacttc	atacaatgta	aggtcagatt	ccttttagga	atactgggtg	4140
ctgtcaccag	gtttgatagt	tagacttaaa	aacttgaaat	tcactttttg	gggggaggga	4200
tactactgaa	tagagagttg	agacttgcca	gttgggggaa	aatagcattt	aaaatggaaa	4260
gctgtgtttg	gaaaattgtg	tatgagtatt	tttgtattaa	aaacatttta	aaggcttttt	4320
tcttaaaaaa	aaaaaaaaaa	aaaa				4344

<210> 264

<211> 1258

<212> DNA

<213> Homo sapiens

<400> 264

aacctcact	aaaggggaaca	aaagctggag	ctccaccgcg	gtggcggccg	ctggctgacc	60
ggcctaaaac	taaaatgaca	tttattccct	agctacaaac	atcagcggtta	ttatgttaat	120
tataccttgc	cctctatcat	tataaatggt	tgccatggtg	tttctaaaaa	taagtgtttt	180
accattaatg	tgtagagggc	aaacaaagca	taaagtacta	agggatcatg	cttatectag	240
ggctctcacag	aagagaggac	atattttaatt	aatcttgtga	attacagaac	agggtgtggt	300
ccagacacca	agaatcatag	gggttttttt	ttaaaaaacc	taatagaagt	aggggtgacct	360
ctctcttttg	tctaagagtt	ctaaaggaag	gtaggcatct	gtttaattag	ttgggtcacc	420
ctggcctttac	ctctgggttaa	tgcttgtgtt	aataggaagg	aaaaatcact	ttatcttttc	480
ttccaagccc	ctccctgcct	gacttaccca	gactgggatt	accagatacc	aggtgattta	540
tgtggagatg	atttttcacc	tttaaactct	aagccaagtg	taagaaactc	ttgatagcta	600
tgtctatttt	atatcagtc	ctgagacttt	tttttaagtt	tttattttatt	attaagacaa	660
ctttgccaaa	aaagtccctt	aagcacaact	atttacattt	ctttatagcc	tcttctgac	720
tctaacacat	atgcagtttt	aactgttatt	ttcatagtaa	ctgatctttt	gtctaaggat	780
ttttacctga	aagcacaatg	tattgagtct	cttgaaaatc	atctttcaga	tctttttaca	840
gaatgaactt	atgcactgct	actgtagtat	tctcaaggaa	tatatgtaaa	cacaaatgta	900
tgcttgaggt	tggtttttgc	agaaaacagt	ctctgcttct	aaaaacttct	atgtctagtc	960
ttccatagga	aatcctcact	gtttaaccat	gtgaggagcc	taagtcatta	aacggatcat	1020
gtctgtacat	tgtgtaatga	atgaaaagca	cataaatgta	atctactttg	aactttgtaa	1080
aaatgatgtg	tggaggctat	tcttgtttct	ccatctcaag	tcctgtgtgt	gcacgtgtgt	1140
gcaagtgcac	atgtgtgtgt	gtaataacac	attgtaaaga	acagaaatta	ctttaaaaaa	1200
taaacagaaa	tggagacctg	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	1258

<210> 265

<211> 1739

<212> DNA

<213> Homo sapiens

<400> 265

ggcacgagag	atcctcagga	tatcttttagc	caaaggaaaa	gctccgcatt	cccacctggg	60
gggaaagctg	gattgccatg	ggcacgaata	gtggtgcaga	gtccctggcc	atcctgaata	120
tccagaatgg	gtttctgaa	gttcttctgc	atgagtttct	tctgccacct	gtgtcaaggc	180
tacttcgatg	gccccctcta	cccagagatg	ttcaatggga	ctctgcacca	ctacttcgtg	240
cccgatgggg	actatgagga	gaacgatgac	cccagagaagt	gccagctgct	cttcagggtg	300
agtgaccaca	ggcgtgctc	ccagggggag	gggagccagg	ttggcagcct	gctgagcctc	360
accctgcggg	aggagtccac	cgtgctgggc	caccaggtgg	aaggatgctg	ggcgcgtgct	420
ggaggggcatc	agcaaaagca	tctcctacga	cctagacggg	gaagagagct	atggcaagta	480
ctgcggcg	gagtcacc	agatcggggg	atgcctactc	caactcggac	aatccctca	540
ctgagctgga	gagcaagttc	aagcagggcc	aggaacagga	cagccggcag	gagagcaggc	600
tcaacagga	ctttctggga	atgctgggtcc	acaccaggtc	cctgctgaag	gagacactgg	660

```

acatctctgt ggggctcagg gacaaatagc agctgctggc cctcaccatt aggaccatgg 720
gacccgacta gtcggctgaa aaatgattat cttaaagtat aggtggaagg atacaaatgc 780
ttagaaagag ggaatcaaat cagccccgtt ttggaagggtg ggggacagaa aatggggcta 840
catttcccc atacctacta tttttttata tcccgatttg cactttgaga atacatctaa 900
ggatcatctt caaaagagaa aaattggaca cttgagtgac tttgttttta gttttgtttt 960
tgaacattat ttatgtgatt gttatggaat tgtcacctgg aaagaacaat tttaagcaat 1020
gtcattttta gatgggtttc taattctgca gagacacccg tttcagccac atctaaaaga 1080
gcacagttta tgtggtgcgg aattaaactt ccccatcctg cagattatgt ggaaataccc 1140
aaagataata gtgcatagct cctttcagcc tctagccttc actcctgggc tccaaaagct 1200
atcccagttg cctgtttttc aaatgaggtt caagggtgctg ctttgcatgc ctgccacccc 1260
atggaagttg tttcttactt cttttctctc ttatttatta accatggtct gagagtgtgt 1320
tttgttctat gtaacagtat tgccacaaaa ctataggcaa atcgtgtttg caggagatt 1380
tctgatccct tctgggtgtg gtgtaagtta aagtggccac atttaagaag gccaaagctt 1440
gtagtgggtg cacagtcaca ctgatatgct gatttgctct ttctcattgt atgtctatgc 1500
tttgatcatc gtgctatagt aaattacaaa gaaataggta gattgtatga acatacccac 1560
aaatgcctat gatttaggtt accaatgtat tctttctcat ttggggtttt gcttctgtct 1620
gtctgtttat tggaacttg tacttcaagt agggggaatc ctaattctaa taactcctta 1680
gctaagtttt attattcagg caataaacat gttttcatgt aaaaaaaaaa aaaaaaaaaa 1739

```

<210> 266

<211> 538

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (462)..(462)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (498)..(498)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (520)..(520)

<223> n equals a,t,g, or c

<400> 266

```

gcttgtaggt actcattgag gtttattgtg taagatgaat gaatgttgca aattcctaaa 60
catgtgattc agatgcccaa tcttactctg ttactttatg aaaatttttt aaagctatat 120
gatgttatat caaaatatgt tgttatactt taggataatc ggtgtgtagg ccctgaattt 180
cagcataagt cccatttttt tccatgggag tctaggaaag ctatatgttt attcagcagc 240
aaaatacagt ttggaactta aataaactat tgatcaattc tggctttatg ctagaaggaa 300
taaagcatca agaaaagaa aagattgctg tcaagaccag gaaaattgac aatagagtat 360
tagaatgcag aaatgagggg aagtggaaar gccascaagt aggagagaaa aagtgcaggg 420
acagtagaaa gtgaatgtag gagcttctga cccagcactc angaacgcaa ttcattccta 480
aaaagctggt gcgtctangt tgccagtaac caattaaan ccgtttgaag tagagtga 538

```

<210> 267

<211> 1346

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (5)..(5)

<223> n equals a,t,g, or c

<220>

<221> misc_feature
 <222> (17)..(17)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (21)..(21)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (36)..(36)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (107)..(107)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (150)..(150)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (323)..(323)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (1307)..(1307)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (1337)..(1337)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (1341)..(1341)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (1343)..(1343)
 <223> n equals a,t,g, or c

<400> 267
 tcccntcaag gccgggnggc ntgttcttgg ccttttncaac ttttgccttt ccactattta 60
 gaatgcaggt gtgtctgtcc tgcaaccag cttctggctc tggaaancca gctgcatcac 120
 ccatgtgcct ggaccttctc cagaccatgn aggccaggc gagtgactca ctgccattca 180
 gtctccatct ttgggcagat ccaccatgag acataacttc ccagaaatcc agttacaagg 240
 aggaataagt attgaagact taagaaatgc attttgcagc aggtcctcgc tgtactgggg 300
 cagecgtcca ttcataagagc ccngctagaa tagaggtcac aagctcagaa gcttctctaa 360
 ggcaggcagg aaatttaagt cgatactatg atctgcattg tgggctggaa tgaacggaag 420
 gtgcctagtc taaacagctg cttgttgctc agctgttggt gccgtattgg gaattcaagc 480
 ctaatgatgt ttgttattcc cattttcaaa agaagtcagg aaatgcagat ttctatgtaa 540
 atttttaaaa cttctgaact gtgtatgagc catacaaaat acatttgcag gccagtcgac 600
 atcctctgat ccagaatatc aatttgtgag acaagttggt ggtgaggcag cattmcatag 660

tagttaaag	catacat	agagccagac	tgcccatg	caaaccctgg	tcccatcact	720
cactmcctty	catttcactt	ctctttgctt	cactttcctc	atcagtaaaa	taaaaataat	780
atcagtacct	acctcatagg	gtttcatgag	cattaaataa	attaaaaccc	ataaagtact	840
ttcaatgcta	tcaggcattt	agttacatgg	taaataagtg	tttaaaacat	ttaaaacaaa	900
agttcaaaga	taataarcaa	ggaaacagaa	aacctgacag	gccagctttg	gaaccttctt	960
gatggcagat	ctatcaacat	ttctcccttt	ggctgggatg	aaaaggcatt	tgggaataaa	1020
agatcccata	aaaataaatg	agaagaagtg	aaacaccttc	attatggcaa	ttttggtgtc	1080
agagcctaaa	agacagaggg	atcaaaatat	tgcagtacta	aaatctgatg	gtttcatgta	1140
gaaatgagat	ttaagcttat	taaaatgtat	ttctttctgg	tgtaataaac	ccttcacaag	1200
acctgggcaa	ttttgaaaga	aggaaagaaa	atggttctcc	ctgtggacaa	raagaaacaa	1260
atgactatta	aattttctaa	tttgagtgta	actagggkgr	ttcccnagt	ttatgtggga	1320
aggtttcagt	gagggtngt	ngngaa				1346

<210> 268

<211> 912

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (36)..(36)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (93)..(93)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (158)..(158)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (592)..(592)

<223> n equals a,t,g, or c

<400> 268

aaaatggttc	tcctgtggc	aagaagaacc	aaatgnctat	taaattttct	aatttggagt	60
gaactaagtt	gatccctagg	tttttgtggg	agnccgggg	gggggagtc	agtggaaagc	120
aattgctgga	gagtagtctt	tgttctttgc	tgacaganca	ggagcagagt	gtggaatgaa	180
aactcaatag	cctcctctat	tctcaagaga	caattgactt	ccatctgttt	aaacctcccc	240
aggggacct	gctcccccca	tttccattta	ctctcctttc	caccaacct	gggtgacatt	300
aagaaaacca	aaccttattg	aaacacaagc	tcttacacat	caaaagtcag	gggagaagtc	360
tgggtgacct	gtaagccact	gcatgaggca	caaagatgca	aaaagggaact	ttcaggaaca	420
actgctgctc	cgaggactct	atgtcagata	taacatccgc	tttggcccaa	aagtaggctt	480
gagccccaga	agaggaggaa	tgtcmagtat	gtttaaaatg	tgaacacctt	agttatactt	540
gctctttact	cagaaaggag	agagtattcc	cttatgcca	cgaggctctt	gngagttggt	600
tgcactattg	gtagcaggtg	ctgcctgggg	tagctcttat	ggtctgtgct	tgaagtgtgc	660
accagctgct	gccctggaca	tgactgttgg	tccttgcata	caagcagcca	cctttaaaca	720
gatcaaatga	ctcttatgat	gacagctgtc	tcaactrtact	ttcaaactgg	ttttaatttg	780
gttacttgca	acctaagaca	gcacacagca	ttttagggat	gaattgcggt	cctgaagtgc	840
atgggtcaga	aagctcmtac	attcactttt	tactgtccct	gcactttttc	tatcctactt	900
gctgcccttc	ca					912

<210> 269

<211> 1177

<212> DNA

<213> Homo sapiens

<220>
 <221> misc_feature
 <222> (1095)..(1095)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (1115)..(1115)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (1142)..(1142)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (1162)..(1162)
 <223> n equals a,t,g, or c

<400> 269
 agccaccatg cccggcctag attaaaaatt tgaagacata ttctctacta tgagccaatg 60
 aaattactca ttttgtttct atcccatttg ctgtcccttg cttttggaat tttgtgtctt 120
 agtgtgactg tgattctttc tctccttttg tctttcagca aacggggatt cagcgtccga 180
 tcctttggaa caggggactca cgtgaagctt ccaggaccag ctcccgacaa gcccaatgtt 240
 tatgatattca aaaccacata tgaccagatg tacaatgatc ttcttaggaa agacaaagaa 300
 ctctatacac agaatgggat tttacatatg ctggacagaa ataagagaat caagccccgg 360
 ccagaaagat tccagaactg caaagacctg tttgatctga tcctcacttg cgaagagaga 420
 gtgtatgacc aggtggtgga agatctgaat tccagagAAC aggagacctg ccagccygtg 480
 cacgtggtca atgtggacat ccaggacaac cagcaggagg ccacctggg ggcgtttctc 540
 atctgtgagc tctgccagtg tatccagcac acggaagaca tggagaacga gatcgacgag 600
 ctgctgcagg agttcgagga gaagagtggc cgcacctttc tgcacaccgt ctgcttctac 660
 tgagcccagc gcccgcatgg agccgcctct ggagcttctt gttgttcata ctttttcctt 720
 cctgacattt gtttttactt acaggtgttc tgctgggtgac ggtagcatta cccaaataaa 780
 ctgtgcatat gaaatgggag aggagatgcc aaaacgccag atgaaagcaa tcaagtttct 840
 tcttttccac ttttacttat gagcrggata ttgattacaa agtttttctt ctttaaccaa 900
 aaaggaaaga caacggtttg tgtgcacttc ccgacatacc tgtgtcttcg tgtgcctgcc 960
 ttccctccct cctccccacc gggccgggact gtacagagcc ctgctgcggc gtgttaggaa 1020
 tgacctggaa ttgtcaataa acagatgctg ctgtcaaaaa aaaaaaaaaa aaaaaaaaaa 1080
 aaaaaaaaaa raaancaaaa aaaaaaaaaa aagngggggc cgaaggtttt ttccctttgg 1140
 tngggggttat ttttggcttg gnattggcct tcgtttt 1177

<210> 270
 <211> 1775
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (820)..(820)
 <223> n equals a,t,g, or c

<400> 270
 gcggcgcggg tgggggttgt gcgttttacg caggctgtgg cagcgacgcy gtccccagcc 60
 tgggtaaaga tgccccatg gccccgaag ggcctagtcc cagctgtget ctggggcctc 120
 agcctcttcc tcaacctccc aggacctatc tggctccagc cctctccacc tccccagtct 180
 tctccccgcg ctccagcccca tccgtgtcat acctgccggg gactgggtga cagctttaac 240
 aagggcctgg agagaacatc ccgggacaaac tttggagggtg gaaacactgc ctggggaggaa 300
 gagaatttgt ccaaatacaa agacagttag acccgcttg tagagggtgct ggagggtgtg 360
 tgcagcaagt cagacttcga gtgccaccgc ctgctggagc tgagttagga gctgggtggag 420

```

agctggtggt ttcacaagca gcaggaggcc cccggacctct tccagtggct gtgctcagat 480
tccttgaagc tctgtgtccc cgcaggcacc ttcggggccct cctgccttcc ctgtcctggg 540
ggaacagaga ggccctgcgg tgggtacggg cagtgtgaag gagaaggagc acgagggggc 600
agcggggcact gtgactgccca agccgggtac gggggtgagg cctgtggcca gtgtggcctt 660
ggctactttt aggcagaacg caacgccagc catctggtat gttcggcttg ttttggcccc 720
tgtgcccgat gctcaggacc tgaggaatca aactgtttgc aatgcaagaa gggctgggcc 780
ctgcatacacc tcaagtgtgt agactgtgcc aaggcctgcn taggctgcat gggggcaggg 840
ccaggctcgt gtaagaagt tagccctggc tatcagcagg tgggctccaa gtgtctcgat 900
gtggatgagt gtgagacaga ggtgtgtccg ggagagaaca agcagtgtga aaacaccgag 960
ggcggttata gctgcatctg tgccgagggc tacaagcaga tggaaggcat ctgtgtgaag 1020
gagcagatcc cagagtcagc aggtcttctt tcagagatga cagaagacga gttggtggtg 1080
ctgcagcaga tgttcttttg catcatcatc tgtgcactgg ccacgctggc tgctaagggc 1140
gacttggtgt tcaccgccat ctctattggg gctgtggcgg ccatgactgg ctactggttg 1200
tcagagcgca gtgaccgtgt gctggagggc ttcatcaagg gcagataatc gcggccacca 1260
cctgtaggac ctctccccc ccacgctgcc cccagagctt gggctgccct cctgctggac 1320
actcaggaca gcttggttta tttttgagag tggggtaagc acccctacct gccttacaga 1380
gcagcccagg taccaggcc cgggcagaca agggccctgg ggtaaaaagt agccctgaag 1440
gtggatacca tgagctcttc acctggcggg gactggcagg cttcacaatg tgtgaatttc 1500
aaaagttttt ctttaattgt gctgtctaga gctttggccc ctgcttagga ttaggtggtc 1560
ctcacagggg tggggccatc acagctccct cctgccagct gcatgctgcc agttcctgtt 1620
ctgtgttcac cacatcccca caccctattg ccacttattt attcatctca ggaaataaag 1680
aaagggtcttg gaaagttaaa aaaaaaaaaa aaaaaaaaaa aaaaaactcg agggggggcc 1740
cgtacccaat cgccctatga tgtagtcgta ttaca 1775

```

<210> 271

<211> 866

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (14)..(14)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (27)..(27)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (33)..(33)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (105)..(105)

<223> n equals a,t,g, or c

<400> 271

```

cctggcttgc tggncagcc ttggtgncca tgntgaacaa gttttgtgga agttctgggg 60
agactccaag aactaccagg aacagggata cgagtgccag gctgnatctc ttgctcctct 120
gcagagtcag caggcttctt ctcagagatg acagaagacg agttggtggt gctgcagcag 180
atgttctttg gcatcatcat ctgtgcactg gccacgctgg ctgctaaggg cgacttggtg 240
ttcaccgccca tcttcatttg ggtgtggcg gccatgactg gctactggtt gtcagagcgc 300
agtgaccgtg tgctggaggg cttcatcaag ggcagataat cgcgggccacc acctgtagga 360
cctcctccca cccacgctgc ccccagagct tgggctgcc tccctgctga cactcaggac 420
agccttggtt atttttgaga gtggggtgaa caccctacc tgccttacag agcagcccag 480
gtaccagggc ccgggcagac aaggccctg gggtaaaaag tagccctgaa ggtggatacc 540
atgagctctt cacctggcgg ggactggcag gcttcacaat gtgtgaattt caaaagtgtt 600
tccttaattg ttgctgctag agctttggcc cctgcttagg attaggtggt cctcacaggg 660

```

gtggggccat	cacagctccc	tcctgccagc	tgcattgctgc	cagttcctgt	tctgtgttca	720
ccacatcccc	acacccatt	gccacttatt	tattcatctc	aggaaataaa	gaaaggtctt	780
ggaaagttaa	aaaaaaaaa	aaaaaaaaa	aaaaaaactc	gagggggggc	ccgtacccaa	840
tcgccctatg	atgtagtctg	attaca				866

<210> 272

<211> 1237

<212> DNA

<213> Homo sapiens

<400> 272

agcaaacc	ggaaggtgtg	gcgtccccgc	ttcgcgcaa	gatgggtgctg	gtgctgcgcc	60
atcctttgtg	tgcccgga	agggcggttc	gggagccggg	tcgggggctc	ctgactcgca	120
ctgggcagca	tgacgggtgcg	ccggctgtca	ctgctgtgcc	gggacctctg	ggcgctgtgg	180
ctgctgctga	aggccggcgc	agtgcgtggg	gcgcgggcgg	gtcctcgctc	ccccggaagg	240
tggtgtgggg	cgacatgcgg	ggacgcgggg	cggggggtga	cgttctgggc	ccagccctgt	300
cctcagaagc	tgctggggca	gaagcccggg	gctgggggat	gccgggggatg	ggtgttgggg	360
tgggtgcctc	cgagaccaga	ggagccctgt	tccttggcag	ggaaggtgtg	cacgggcctt	420
gcccgatgga	tggttttaggg	ccatggccct	ggggtccctg	gtgagcagtg	gggcccctc	480
tgcccttggc	ctgtgagga	ctgtctgtgc	tgggtccaga	aggctgggat	cacctttcca	540
ctggctcctt	tggtcgaggt	ttttcataga	caggctatgt	ggacaaatga	gggcagcgcc	600
cacgtctggc	tggtggaggg	gctgcggctc	ctccttggag	gggacgcctg	gccactgctg	660
tccccacaat	ggggccaccc	gtgggtgcaag	gcgtgacaag	ctgccctctc	taggtaagca	720
ggacttggga	ggccccctggc	caagcctgtg	gacccggctg	ggcgccctct	gtggctctcag	780
gtttgggtgt	gtttgggtctg	gtcagggctc	aggggctgct	ggtccacact	ggccccatcc	840
tgacaattgg	agctttgggg	caaggctccct	ggagaagggg	tcacgtcggg	aggaaacagc	900
ctgggttttg	ttgatgcttt	tctaagaatg	gagtactcgt	tttcaagaga	tttgtcctaa	960
ttatattttc	cagcgggtac	ttatgccaa	tattgatgaa	taattcataa	aataagcatc	1020
tttgtgaatt	ttagtgaatc	agaccttaac	tatcaacggc	aatgaatgaa	catctaaagt	1080
ttccaatttt	aaagtaaaga	actggctggg	tacagcagtt	cacgcctgta	atcccagcac	1140
tttgggaggg	caaggctaga	ggatcgcttg	agcccaggag	tttgagatca	gcctgggcaa	1200
cataccaaga	cctcatctgt	taaaaaaaaa	aaaaaaa			1237

<210> 273

<211> 1681

<212> DNA

<213> Homo sapiens

<400> 273

cgatggcccc	gcggccgctc	tagaaagtcc	cgtttttttt	tttttttttt	tttttttttt	60
tttttagagta	cgttctgcat	tttatttytg	caggcaacac	tttgctcacc	agcaagaaca	120
cagcccragg	aagggaacca	ataacctttc	aaaacscaaa	ctgctkcctg	cggtgagggc	180
ccagggtcct	ccacggagag	gacaggcatc	ttcctttccc	accaggaagg	agtcagcccg	240
gagcctctgc	tatgtgcaag	gcgggtgtga	agcaccggct	gcggctcttt	gctgtctctt	300
ctttctcttt	ggggctgggc	tgggtgtgcg	ttctgggtgt	gatgctttgg	cctgtgaggg	360
tgagcttggc	ayctcgaccc	gttcaattac	agcaacgaag	aagccactgc	tragygtggt	420
ctcaggggar	gcccggaggg	agtgtcggc	acccgggaac	gtgctcaggg	ctcgggtggg	480
ccaggcaggc	aggcggggag	ctagcctgaa	ggcgcccggg	ttctgctgca	gcgcatctcg	540
caccacgtct	tcattctcct	cctggcagag	ggagcacgtg	gagtagacga	gccgctgcag	600
ggaagggaaa	gtgagcgctg	ggcacagggc	tcgctgctgg	aaccctgcca	gggcatgcag	660
acgcaccggg	ctaggtgtsc	ctgccccggg	mtcctccagc	tgtctgctcg	gcatacccga	720
ggcactgcag	gaaggtatcca	gcaggayrta	gtggacctca	ygrtagcgyg	gatcyraggg	780
ggagaccgcc	aggaagtcc	cctcagccag	ytacagcar	gagacgccag	cccrggccag	840
cagcgtggcc	atggatgcca	gccgcttggc	atccagggtca	aaggcaaaga	tttcccttg	900
gttcttcaga	agagcagcca	agtactgggt	cttattgcct	ggggcggcac	aggcatcgat	960
gacatgggag	cctggcgggg	ggtccagcag	catggctggg	agacagctgg	ccctgtcctg	1020
cagaatgagg	tgtccggccc	ggtacagtgg	gtgttcatgc	agatctgtct	gggcgggaaa	1080
caccagcagc	tccggcatca	aggggtccag	gagaaaaatgc	ttccccttga	gggctcgtaa	1140
gtcatcgagg	ctgggaagccc	gaccctgata	ggagaaacct	tgtctcttga	aataatcaac	1200
tacatcatcg	gagcaggtct	tgagagtgtt	cacacgcaca	aatcgaggca	gctgggaggg	1260
tggaccaggc	ctggatccca	cttccaacag	gtcctcatte	cggctcacac	cccgatgaac	1320

cttgagccga	gccaactcag	ccttgagcct	cgcttggtgc	cggcccaaca	gagccttcca	1380
tcggccccc	ccccctcgaa	agccctttcc	caacaacaac	tcatacacta	gcaccttggc	1440
caggtgcccc	cgcagcttct	tctccgcacg	gaggaggccg	gcgctggcga	tcacagcatc	1500
cagcacggcg	gagtagcgct	gcgtttcgca	caccagcgcg	tacagctgct	tcacgttctg	1560
gaagttgctg	gagtacacca	accccttgat	agagcctggc	ggetctccac	gccggccaac	1620
acgcctgcag	ctgcagcata	cagccccatg	ttccgtcgcg	ctttacggct	ttgtggcaaa	1680
a						1681

<210> 274

<211> 1863

<212> DNA

<213> Homo sapiens

<400> 274

gactaggccg	cgagcttagt	cctgggagcc	gcctccgtcg	ccgccgtcag	agccgcctta	60
tcagattatc	ttaacaagaa	aaccaactgg	aaaaaaaaat	gaaatttcctt	atcttcgcat	120
ttttcggtag	tgttcacctt	ttatccctgt	gctctgggaa	agctatatgc	agaatggca	180
tctctaagag	gacttttgaa	gaaataaaaag	aagaaatagc	cagctgtgga	gatgttgcta	240
aagcaatcat	caacctagct	gtttatggta	aagcccagaa	cagatcctat	gagcgattgg	300
cacttctggt	tgatactggt	ggacccagac	tgagtggctc	caagaacctta	gaaaaagcca	360
tccaaattat	gtacaaaac	ctgcagcaag	atgggctgga	gaaagtccac	ctggagccag	420
tgagaatacc	ccactgggag	agggggagaag	aatcagctgt	gatgctggag	ccaagaattc	480
ataagatagc	catcctgggt	cttggcagca	gcattgggac	tcctccagaa	ggcattacag	540
cagaagttct	ggtggtgacc	tctttcgatg	aactgcagag	aagggcctca	gaagcaagag	600
ggaagattgt	tgtttataac	caaccttaca	tcaactactc	aaggacggtg	caataccgaa	660
cgcagggggc	ggtggaagct	gccaaaggtt	gggctttggc	atctctcatt	cgatccgtgg	720
cctccttctc	catctacagt	cctcacacag	gtattcagga	ataccaggat	ggcgtgcccc	780
agattccaac	agcctgtatt	acggtggaag	atgcagaaat	gatgtcaaga	atggcttctc	840
atgggatcaa	aattgtcatt	cagctaaaga	tgggggcaaa	gacctaccca	gatactgatt	900
ccttcaacac	tgtagcagag	atcactggga	gcaaatatcc	agaacagggt	gtactggtca	960
gtggacatct	ggacagctgg	gatgttgggc	aggtgcccac	ggatgatggc	ggtggagcct	1020
ttatatcatg	ggaagcactc	tcacttatta	aagatcttgg	gctgcgtcca	aagaggactc	1080
tgcggctggt	gctctggact	gcagaagaac	aaggtggagt	tggtgccttc	cagtattatc	1140
agttacacaa	ggtaaatatt	tccaaactaca	gtctggtgat	ggagtctgac	gcaggaacct	1200
tcttaccac	tgggtgcaa	ttcactggca	gtgaaaaggc	cagggccatc	atggaggagg	1260
ttatgagcct	gctgcagccc	ctcaatatca	ctcaggtcct	gagccatgga	gaagggacag	1320
acatcaactt	ttggatccaa	gctggagtgc	ctggagccag	tctacttgat	gacttataca	1380
agtatttctt	cttccatcac	tcccacggag	acaccatgac	tgtcatggat	ccaaagcaga	1440
tgaatgttgc	tgctgctggt	tgggctgttg	tttcttatgt	tggtgcagac	atggaagaaa	1500
tgctgcctag	gtcctagaaa	cagtaagaaa	gaaacgtttt	catgcttctg	gccaggaatc	1560
ctgggtctgc	aactttggaa	aactcctctt	cacataacaa	tttcatccaa	ttcatcttca	1620
aagcacaact	ctatttcatg	ctttctgtta	ttatctttct	tgatactttc	caaattctct	1680
gattctagaa	aaaggaatca	ttctcccctc	cctcccacca	catagaatca	acatatggta	1740
gggattacag	tgggggcatt	tctttatata	acctcttaaa	aacattgttt	ccactttaaa	1800
agtaaacact	taataaattt	ttggaagatc	tctgaaaaaa	aaaaaaaaaa	aaagggcggc	1860
cgc						1863

<210> 275

<211> 1134

<212> DNA

<213> Homo sapiens

<400> 275

tccatctaca	gtcctcacac	aggtattcag	gaataaccagg	atggcgtgcc	caagattcca	60
acagcctgta	ttacgggtga	agatgcagaa	atgatgtcaa	gaatggcttc	tcattgggatc	120
aaaattgtca	ttcagctaaa	gatgggggca	aagacctacc	cagatactga	ttccttcaac	180
actgtagcag	agatcactgg	gagcaaatat	acagaacagg	ttgtactggg	cagtggacat	240
ctggacagct	gggatgttgg	gcagggtgcc	atggatgatg	gcgggtggagc	ctttatatca	300
tgggaagcac	tctcacttat	taaagatctt	gggctgcgtc	caaagaggac	tctgcccgtg	360
gtgctctgga	ctgcagaaga	acaagggtgga	gttggtgcct	tccagtatta	tcagttacac	420
aaggtaata	tttccaacta	cagtctgggtg	atggagtctg	acgcaggaac	cttcttacc	480

```

actgggctgc aattcactgg cagtgaaaag gccagggcat catggaggag gttatgagcc 540
tgctgcagcc cctcaatatc actcagggtcc tgagccatgg agaagggaca gacatcaact 600
tttggatcca agctggagtg cctggagcca gtctacttga tgacttatac aagtatttct 660
tcttccatca ctcccacgga gacaccatga ctgtcatgga tccaaagcag atgaatgttg 720
ctgctgctgt ttgggctggt gtttcttatg ttgttgaga catggaagaa atgctgccta 780
ggtcctagaa acagtaagaa agaaacgttt tcatgcttct ggccaggaat cctgggtctg 840
caactttgga aaactcctct tcacataaca atttcatcca attcatcttc aaagcacaac 900
tctatttcat gctttctggt attatcttct ttgatacttt ccaaattctc tgcattctag 960
aaaaggaat cattctcccc tcctccccc cacaatagaat caacatatgg tagggattac 1020
agtgggggca tttctttata tcacctctta aaaacattgt ttccacttta aaagtaaaaca 1080
cttaataaat ttttggaaga tctctgaaaa aaaaaaaaaa aaaaaaaaaa aaaa 1134

```

<210> 276

<211> 626

<212> DNA

<213> Homo sapiens

<400> 276

```

gccacgcgt ccgcctaaac acagtcacca tgaagctggg ctgtgtcctc atggcctggg 60
ccctctacct ttcccttgggt gtgctctggg tggcccagat gctactggct gccagttttg 120
agacgctgca gtgtgagggg cctgtctgca ctgaggagag cagctgccac acggaggatg 180
acttgactga tgcaagggaa gctggcttcc aggtcaaggc ctacactttc agtgaaccct 240
tccacctgat tgtgtcctat gactggctga tcctccaagg tccagccaag ccagtttttg 300
aaggggacct gctggttctg cgctgccagg cctggcaaga ctggccactg actcaggatg 360
ccttctaccg agatggctca gctctgggtc ccccggggcc taacagggaa ttctccatca 420
ccgtgggtaca aaaggcagac agcgggcact accamtgcag tggcatcttc cagagccctg 480
gtcctgggat ccagaaaaca gcatctgttg ttgctatcac agtccaagaa ctgtttccag 540
cgccaattct ccttctacaa ggatggaagg atagtgcaaa gcaggggggc tctcctcaga 600
attccagatc cccacagctt cagaaa

```

<210> 277

<211> 152

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (41)..(41)

<223> n equals a,t,g, or c

<400> 277

```

cagccagct tcatggtgac tgtgtttagg tctccctcgt nccgaattcc tgcagcccg 60
gggatccact agttctagag cggccgccac cgcggtgag ctccagcttt tgttcccttt 120
agtgaggggt aatttcgagc ttggcgtaat ca

```

<210> 278

<211> 1760

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1693)..(1693)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1748)..(1748)

<223> n equals a,t,g, or c

<400> 278

```

gggaattctc catcaccgtg gtacaaaagg cagacagcgg gcactaccac tgcagtgcac 60
cttccasagc cctgggtcctg ggatcccaga aacagcatct gttgtggcta tcacagtcca 120
agaactgttt ccagcgccaa ttctcagagc tgtaccctca gctgaacccc aagcaggarg 180
ccccatgacc ctgagttgtc agacaaagtt gcccctgcag aggtcagctg cccgcctcct 240
cttctccttc tacaaggatg gaaggatagt gcaaagcagg gggctctcct cagaattcca 300
gatccccaca gcttcagaag atcactccgg gtcatactgg tgtgaggcag ccactgagga 360
caaccaagtt tggaaacaga gccccagct agagatcaga gtgcaggggtg cttccagctc 420
tgtgtcacct ccacattga atccagctcc tcagaaatca gctgctccag gaactgctcc 480
tgaggaggcc cctgggtcctg cctccgcgcg caacccccatc ttctgaggat ccaggctttt 540
cttctcctct ggggatgccg gatcctcctc tgtatcacca gatgggcctt cttctcaaac 600
acatgcagga tgtgagagtc ctctcgggtc acctgctcat ggagttgagg gaattatctg 660
gccaccrgaa gcttgggacc acaaaggcta ctgctgaata gaagtaaaca gttcatccat 720
gatctcactt aaccacccca ataaatctga ttctttattt tctcttctctg tcctgcacat 780
atgcataagt acttttataa gttgtccag tgttttgta gaataatgta gttagggtgag 840
tgtaataaaa tttatataaa gtgagaatta gagtttagct ataatttgtt attctctctt 900
aacacaacag aattctgctg tctagatcag gaatttctat ctgttatatc gaccagaatg 960
ttgtgattta aagagaacta atggaagtgg attgaatata gcagtctcaa ctgggggcaa 1020
ttttgcccc aagaggacat tgggcaatgt ttggagacat tttggtcatt atacttgggg 1080
ggttggggga tgggtgggatg tgtgtgctac tggcatccag taaatagaag ccagggtgac 1140
cgctaaacat cctataatgc acagggcagt accccacaac gaaaaataat ctggcccaaa 1200
atgtcagttg tactgagttt gagaaacccc agcctaataa aaccctaggt gttgggctct 1260
ggaataggga ctttgtccyt tctaattatt atctctttcc agcctcattc agctattctt 1320
actgacatac cagtcttttag ctggtgctat ggtctgttct ttagttctag tttgtatccc 1380
ctcaaaagcc attatgttga aatcctaate cccaaggtga tggcattaag aagtgggcct 1440
ttgggaagtg attagatcag gtagtcagag cctcatgat taggattagt gcccttattt 1500
aaaaaggccc cagagagcta actcaccctt ccaccatag aggacgtggc aagaagatga 1560
catgtatgag aaccaaaaaa cagtgtcgcc aaacaccgac tctgtcgttg ccttgatctt 1620
gaacttccag cctccagaac tatgagaaat aaaattctgt tgtttgtaag ctaatccagt 1680
tgtgtaattt ggnatagtag cccaaatgga ctaggcagtt ggcctctggc cacatgatga 1740
gttatggnat gtaaaaaatac 1760

```

<210> 279

<211> 880

<212> DNA

<213> Homo sapiens

<400> 279

```

ggcacgagac tggatgaaca caaactccac atgtatcttt ctgccttgca gtccttgatc 60
ccatctctct ttcattagtg gctacagaat gcacctttct ccagcaaagc caagcttcat 120
ggtgaagtgc cacagataga agtgactagg tttcctcggc ctatgtcgcc tcttcaagat 180
gtgtccacta ttatcggaag tcgtgagcaa ttggcagtg tgctgcaact ttatgactac 240
cagctagaac aagagggtac aacaggctgg gagagtttac tgtgggttgt caatcaattg 300
ttgccacaac ttatagaaat agttggcaaa attaatgtta cttcaactgc ctgtgtccat 360
gaattctcca gatttttctg gcgcctttgc cggacatttg gcaaaatttt taaaaacact 420
aaggtaaaac ctgagttcca ggagatttta agactatctg aagaaaacat tgattcctca 480
gcaggaaatg gggtcctcac taaagctaca gtccccattt atgcaacagg agtccttacg 540
tgttatattc aggaagaaga ccgaaaactg ttagttggat tcttagaaga tgtaatgacg 600
ctgctttcat tatctcatgc tcctcttgat agcctgaagg cttcttttgt ggaattgggt 660
gcaaaacccag cctaccatga gttactatta actgttttgt ggtatgggtg tgtccatact 720
tcagcactcg tgaggtgtac tgctgctaga atgtttgagg tatgtcaaca catgcctctg 780
ttggtttcaa ttataatgat tttttttttt ttgcgaagaa gaagggaatt ttttttaata 840
aaaaggcttt gcatacaaa aaaaaaaaaa aaaaaaaaaa 880

```

<210> 280

<211> 1106

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (5)..(5)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (857)..(857)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1037)..(1037)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1058)..(1058)

<223> n equals a,t,g, or c

<400> 280

tccancatta	tgggatacat	tgatgatcca	gacaaatc	atcagggttt	tgaattgttg	60
ctgtcagcct	tgggtgatcc	ctcagaaaga	gtagttagtg	ctacacatca	agtattttta	120
ccagcttacg	ctgcgtggac	tacagaactt	ggaaatttac	agtctcatct	tatacttaca	180
ctactgaaca	agattgaaaa	acttctcagg	gaaggagAAC	atggactgga	tgaacacaaa	240
ctccacatgt	atctttctgc	cttgcagtc	ttgatcccat	ctctctttgc	attagtgtca	300
cagaatgcac	ctttctccag	caaagccaag	cttcatgggtg	aagtgccaca	gatagaagtg	360
actaggtttc	ctcggcctat	gtcgcctctt	caagatgtgt	ccactattat	cggaagtcgt	420
gagcaattgg	cagtgcctgt	gcaactttat	gactaccagc	tagaacaaga	gggtacaaca	480
ggctgggaga	gtttactgtg	ggttgtcaat	caattgttgc	cacaacttat	agaaatagtt	540
ggcaaaatta	atgttacttc	aactgcctgt	gtccatgaat	tctccagatt	tttctggcgc	600
ctttgccgga	catttggcaa	aattttttaca	aacactaagg	taaaacctca	gttccaggag	660
attttaagac	tatctgaaga	aaacattgat	tcctcagcag	gaaatggggt	cctcactaaa	720
gctacagtcc	ccatttatgc	aacaggagtc	cttacgtgtt	atattcagga	agaagaccga	780
aaactgttag	ttggattctt	agaagatgta	atgacgctgc	tttcattatc	tcatgctcct	840
cttgatagcc	tgaaggnttc	ttttgtggaa	ttgggtgcaa	accaggccta	ccatgagtta	900
ctattaactg	ttttgkggta	tggkgtkgkc	catacttcag	cactcgtgag	gtgtactgct	960
gctagaatgt	ttgagctgtt	ggtgaagggg	gtgaatgaaa	ctctggtagc	tcagaggggt	1020
gttctctgct	ttcattnact	ctctccagtg	gaccctgnaa	atctctgtca	ggattgccac	1080
aatttcacgc	ctttgggact	atttat				1106

<210> 281

<211> 646

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (19)..(19)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (544)..(544)

<223> n equals a,t,g, or c

<400> 281

cagatgccag	ggacttggnc	ttccccgggt	tgaaccacag	gttccaagaa	acctgcaggg	60
tccagcctcc	cccccatccc	cagtyttccc	caccctggcc	cggccctcca	ggtgcagaaa	120
catgcaggcc	cctctccagg	actgtgggag	gagtgtgtcc	ctcagactgg	cctgtgtcct	180
ggctcctctt	accacctctt	ccagaggttg	tcacctgcag	ctgccccagg	ataaaggcaa	240
ggccagarag	gactcctgaa	ctcctgtgtg	cctgggggtg	cagggggcaa	catagccaac	300
tggtggcctg	agcggggcca	tggtgargac	acccttgggtg	gcttgtccca	catcaagctg	360
ggargtgaca	cttaggatgc	atttttcaat	atttttagtgt	ttgaataacg	ggctawcttg	420

agaaaaaaaaat	aatttgaatc	acacatcaca	ccaaaaataa	attctaggtg	gattttaaca	480
ctttccaaaa	attattatta	gttttagagac	aggggtctcac	tccgtcgcct	aggctggagt	540
gcanggggat	gatcatggtt	cactgcaacc	ttaaaactccc	tggcctcata	tgatcccccc	600
gggctccagc	ccctccaaag	ttactgggaa	actaccaaac	atgccc		646

<210> 282

<211> 1590

<212> DNA

<213> Homo sapiens

<400> 282

tttttttttt	tttgtttaaa	tgatacaact	taattttatt	aggacagacg	ctggcgccca	60
ccagaagttt	gagcctcttt	ggtagcagga	ggctggaaga	aaggacagaa	gtagctctgg	120
ctgtgatggg	gatcttactg	ggcctgttac	tcctggggca	cctaacagtg	gacacttatg	180
gccgtcccat	cctggaagtg	ccagagagtg	taacaggacc	ttggaaaggg	gatgtgaatc	240
ttccctgcac	ctatgacccc	ctgcaaggct	acacccaagt	cttgggtgaag	tggtgtgtac	300
aacgtggctc	agaccctgtc	accatctttc	tacgtgactc	ttctggagac	catatccagc	360
aggcaaagta	ccagggccgc	ctgcatgtga	gccacaaggt	tccaggagat	gtatccctcc	420
aattgagcac	cctggagatg	gatgaccgga	gccactacac	gtgtgaagtc	acctggcaga	480
ctcctgatgg	caaccaagtc	gtgagagata	agattactga	gctccgtgtc	cagaaacact	540
cctcaaagct	actcaagacc	aagactgagg	cacctacaac	catgacatac	cccttgaaag	600
caacatctac	agtgaagcag	tcctgggact	ggaccactga	catggatggc	taccttggag	660
agaccagtgc	tgggccagga	aagagcctgc	ctgtctttgc	catcatcctc	atcatctcct	720
tgtgtgtgat	ggtgggtttt	accatggcct	atatcatgct	ctgtcggaag	acatcccaac	780
aagagcatgt	ctacgaagca	gccagggcac	atgccagaga	ggccaacgac	tctggagaaa	840
ccatgagggg	ggccatcttc	gcaagtggct	gctccagtga	tgagccaact	tcccagaaac	900
tgggcaacaa	ctactctgat	gagccctgca	taggacagga	gtaccagatc	atcgcccaga	960
tcaatggcaa	ctacgcccgc	ctgctggaca	cagttcctct	ggattatgag	tttctggcca	1020
ctgagggcaa	aagtgtctgt	taaaaatgcc	ccattaggcc	aggatctgct	gacataattg	1080
cctagtcatg	ccttgccctc	tgcatggcct	tcttccctgc	tacctctctt	cctggatagc	1140
ccaaagtgtc	cgccctacaa	cactggagcc	gctgggagtc	actggctttg	ccctggaatt	1200
tgccagatgc	atctcaagta	agccagctgc	tggatttggc	tctgggccct	tctagtatct	1260
ctgccggggg	cttctgtgtac	tcctctctaa	ataccagagg	gaagatgccc	atagcactag	1320
gacttgggtca	tcattgctac	agacactatt	caactttggc	atcttgccac	cagaagaccc	1380
gagggaggct	cagctctgcc	agctcagagg	accagctata	tccaggatca	tttctctttc	1440
ttcagggcca	gacagctttt	aattgaaatt	gttattttac	aggccagggt	tcagttctgc	1500
tcctccacta	taagtctaat	gttctgactc	tctcctgggt	ctcaataaat	atctaataat	1560
aacagcaaaa	aaaaaaaaaa	aaaactcgag				1590

<210> 283

<211> 1179

<212> DNA

<213> Homo sapiens

<400> 283

gggctgcagg	aattcgccac	gagtttaaa	ggtgactcgt	cccacttgtg	ttctctctcc	60
tggtgcagag	ttgcaagcaa	gtttatcgga	gtatcgccat	gaagttcgtc	ccctgcctcc	120
tgctggtgac	cttgtcctgc	ctggggactt	tgggtcaggc	cccagggcaa	aagcaaggaa	180
gcactgggga	ggaattccat	ttccagactg	gagggagaga	ttcctgcact	atgcgtccca	240
gcagcttggg	gcaaggtgct	ggagaagtct	ggcttcgcgt	tcgactgccg	caacacagac	300
cagacctact	ggtgtgagta	cagggggcag	cccagcatgt	gccaggcttt	cgctgctgac	360
cccaaatctt	actggaatca	agccctgcag	gagctgaggc	gccttcacca	tgcgtgccag	420
ggggccccgg	tgcttaggcc	atccgtgtgc	agggaggctg	gaccccaggc	ccatatgcag	480
caggtgactt	ccagcctcaa	gggcagccca	gagcccaacc	agcagcctga	ggctgggacg	540
ccatctctga	ggcccaggc	cacagtga	ctcacagaag	caacacagct	gggaaaggac	600
tcgatggaag	agctgggaaa	agccaaaccc	accacccgac	ccacagccaa	acctaccag	660
cctggaccca	ggcccggagg	gaatgaggaa	gcaaagaaga	aggcctggga	acattgttgg	720
aaacccttcc	aggccctgtg	cgcctttctc	atcagcttct	tccgaggggtg	acaggtgaaa	780
gacccttaca	gatctgacct	ctccctgaca	gacaaccatc	tctttttata	ttatgccgct	840
ttcaatccaa	cgttctcaca	ctggaagaag	agagtttcta	atcagatgca	acggcccaaa	900
ttcttgatct	gcagcttctc	tgaagtttgg	aaaagaaacc	ttcctttctg	gagtttgacg	960

agttcagcaa	tatgataggg	aacaggtgct	gatgggcccc	agagtgacaa	gcatacacia	1020
ctacttatta	tctgtagaag	ttttgctttg	ttgatctgag	ccttctatga	aagtttaaat	1080
atgtaacgca	ttcatgaatt	tccagtgctc	agtaaatagc	agctatgtgt	gtgcaaaata	1140
aaagaatgat	ttcagaaaaa	aaaaaaaaaa	aaaactcga			1179

<210> 284

<211> 819

<212> DNA

<213> Homo sapiens

<400> 284

gaattcggca	cgaggagaat	catgggcctc	tggttgggca	tgctggcctg	tgtcttcctg	60
gcaactgctg	cctttgttgc	ttatactgcc	cggtctggact	ggaagcttgc	tgcagaggag	120
gctaagaaac	attcaggccg	gcagcagcag	cagagagcag	agagcactgc	aaccagacct	180
gggcctgaga	aagcagtcct	atcttcagtg	gctacaggca	gttcccctgg	cattaccttg	240
acaacgtatt	caaggtctga	gtgccacgtg	gacttcttca	ggactccaga	ggaggcccac	300
gccctttcag	ctcctaccag	cagactatca	gtgaaacagc	tggtcatccg	ccgtggggct	360
gctctggggg	cggcgtcagc	acactgatgg	tggggctcac	ggtcaggatc	ctagccacca	420
ggcactagca	aagaagcctg	gaaatagaaa	gccaggagtg	gctgtcccca	gtatgcaaac	480
acaccacggt	ctgccctgca	aaaacaccaa	tggggtctag	tgcagggtga	cactttgaac	540
cactcctcaa	aaaaagaact	ttggctgaty	ccttgtgggt	acactcagag	gggtctgaac	600
agacttgaca	attctgttct	ggtcaagctg	gagttttctt	ctgtgacttg	gactgctcta	660
cagaagacat	cagccaactg	cacgagtcag	agtccaggga	ttgtcactat	tattaataat	720
gtaaatggct	tcaaatggga	cactgcagat	aammycacia	aaaccactgt	tatattaaag	780
attacacatt	tcctggaaaa	aaaaaaaaaa	aaaactcga			819

<210> 285

<211> 1792

<212> DNA

<213> Homo sapiens

<400> 285

ggcacgagg	tggttgagtt	tggtttggag	caaaactgag	gtagtcctaa	catttctggg	60
actgaatcca	ggcaagagaa	agaagaaaaa	gaagaagaaa	aagaggagga	aaaagtggat	120
tacacaatga	catggagaat	gggaccccg	ttcactatgc	tggttgccat	gtggctagt	180
tgtggatcag	aacccacccc	ccatgccact	attagaggca	gccacggagg	acggaaagt	240
ccttttggtt	ctccggacag	cagtagggca	gctcggtttc	tgaggcacac	tgggaggtct	300
cgcggaattg	agagatccac	tctggaggaa	ccaaaccttc	agcctctcca	gagaaggagg	360
agtgtgcccc	tggtgagact	agctcgccca	acagagccgc	cagcccgtc	ggacatcaat	420
ggggccgccc	tgagacctga	gcaaagacca	gcagccagg	gctctccg	tgagatgac	480
agagatgagg	ggctcctcag	tcggtcaaga	atgttgcggt	tcctctcggg	gtccagctct	540
cccaacatcc	ttgccagctt	tgcaagggaag	aacagagtat	gggtcatctc	agcccctcat	600
gctcgcgaag	gctactaccg	cctcatgatg	agcctgctga	aggacgatgt	gtactgtgag	660
ctggcggaga	ggcacatcca	acagatttgt	ctcttccacc	aggcaggaga	ggaaggaggc	720
aaggtgagaa	ggatcaccag	cgagggccag	atcctggagc	agcccctgga	ccctagcctc	780
atccctaagc	tgatgagctt	cctgaagctg	gagaagggca	agtttggtat	ggtgctgctg	840
aagaagacgc	tgcaagggtga	ggagcgctat	ccatatcccg	ttaggctgga	agccatgtac	900
gaggtcatcg	accaaggccc	catccgtagg	atcgagaaga	tcaggcagaa	gggctttgtc	960
cagaaatgta	aggcctctgg	tgtagagggc	caggtggttg	cggaggggaa	tgacgggtgga	1020
gggggagcag	gaaggccaag	cctgggcagc	gagaagaaga	aagaggaccc	aaggagagca	1080
caagtcctcc	caaccagaga	gagtcgggtg	aaggtcctga	gaaaactggc	cgccactgca	1140
ccagcttttc	cccaacctcc	ctcaaccccc	agagccacca	cccttctctc	tgccccagcc	1200
acaacagtga	ctcgggtccac	gtccccggcg	gtaacagttg	ctgcaagacc	tatgaccacc	1260
actgcctttc	ccaccacgca	gaggccctgg	acccctcac	cctccacag	gccccctaca	1320
accactgagg	tgatcactgc	caggagaccc	tcagtttctag	agaatcttta	ccctccatcc	1380
cggaaaggatc	agcacaggga	gaggccacag	acaaccagga	ggcccagcaa	ggccaccagc	1440
ttggagagct	tcacaaatgc	ccctcccacc	accatctcag	aaccacgac	aagggtctgt	1500
ggcccaggcc	gtttccggga	caaccgcatg	gacaggcggg	aacatggcca	ccgagaccga	1560
aatgtggtgc	caggtcctcc	caagccagca	aaggagaaac	ctcccaaaaa	gaaggccag	1620
gacaaaattc	ttagtaatga	gtatgaggaa	gtatgacctc	agccggccta	ctgcctctca	1680
gctggaggac	gagctgcagg	tggggaatgt	tccccttaaa	aaagcaaagg	agtctaaaaa	1740

gcatgaaaag cttgagaaac cagagaagga gaagaaaaaa aaaaaaaaaa aa 1792

<210> 286

<211> 1673

<212> DNA

<213> Homo sapiens

<400> 286

```

ggcagcagag aatgggaccc cgtttacta tgctgttggc catgtggcta gtgtgtggat 60
cagaacccca ccccatgcc actattagag gcagccacgg aggacggaaa gtgcctttgg 120
tttctccgga cagcagtagg ccagctcggg ttctgaggca cactgggagg tctcgcggaa 180
ttgagagatc cactctggag gaaccaaacc ttcagcctct ccagagaagg aggagtgtgc 240
ccgtgttgag actagctcgc ccaacagagc cgccagcccg ctcgacatc aatggggccg 300
ccgtgagacc tgagcaaaga ccagcagcca ggggtctctc gcgtgagatg atcagagatg 360
aggggtcctc agctcgggta agaattgtgc gtttcccttc ggggtccagc tctcccaaca 420
tccttgccag ctttgccagg aagaacagag tatgggtcat ctacagccct catgcctcgg 480
aaggctacta ccgcctcatg atgagcctgc tgaaggacga tgtgtactgt gagctggcgg 540
agaggcacat ccaacagatt gtgctcttcc accaggcagg agaggaagga ggcaaggtga 600
gaaggatcac cagcggggc cagatcctgg agcagccctt ggaccctagc ctcatcccta 660
agctgatgag cttcctgaag ctggagaagg gcaagtgttg catggtgctg ctgaagaaga 720
cgctgcaggt ggaggagcgc tatccatcgc ccgttaggct ggaagccatg tacgaggtca 780
tcgaccaagg ccccatccgt aggatcgaga agatcaggca gaagggtttt gtccagaaat 840
gtgaaggcctc tgggtgtagag ggccaggtgg tggcgagggg gaatgacggg ggagggggag 900
caggaaggcc aagccagggc agcgagaaga agaaagagga cccaaggaga gcacaagtcc 960
caccaaccag agagagtcgg gtgaagggtc tgagaaaact ggccgccact gcaccagctt 1020
ttccccaacc tccctcaacc ccagagcca ccacgcttac tcctgccccca gccacaacag 1080
tgactcgggtc cacgtcccgg gcgggaaaca gatgctgcaa gacctatgac caccactggc 1140
tttccacca cgcagaggcc ctggaccccc tcaccttcc cacaggcccc ctacaaccac 1200
tgagggtgat cactgccagg agaccctcag ttccagaga atctttacc tccattccc 1260
gaaggatcag cacagggaga ggccacagac aaccaggagg ccagcaagg cccaccagct 1320
tggagagctt cacaaatgcc cctcccacca ccatctcaga acccagcaca agggctgctg 1380
gccaggccg tttccgggac aaccgcatgg acaggcggga acatggccac cgagacccaa 1440
atgtggtgcc aggtcctccc aagccagcaa aggagaaacc tcccaaaaag aaggcccagg 1500
acaaaattct tagtaatgag tatgaggaga agtatgacct cagccggcct actgcctctc 1560
agctggagga cgagctgcag gtgggggaatg ttccccttaa aaaagcaaag gagtctaaaa 1620
agcatgaaaa gcttgagaaa ccagagaagg agaagaaaaa aaaaaaaaaa aaa 1673

```

<210> 287

<211> 2084

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (775)..(775)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (2080)..(2080)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (2083)..(2083)

<223> n equals a,t,g, or c

<400> 287

```

ggcagagggc catttcctgc aaagagccaa accccattc ctctgtgcc ctcctctccc 60
accaagtgtt ttataaaaat agctcttgtt accggaaata actgttcatt ttctactcct 120
ccctcctagg tcacactttt cagaaaaaga atctgcatcc tggaaaccag aagaaaaata 180

```

tgagacgggg	aatcatcgtg	tgatgtgtgt	setgcctttg	gctgagtgtg	tggagtcctg	240
ctcaggtgtt	aggtacagtg	tgtttgatcg	tggtggcttg	aggggaaccg	cttgttcaga	300
gctgtgactg	cggtgcactg	gcagagaagc	tgcccttggc	tgctcgtagc	gccgggcctt	360
ctctcctcgt	catcatccag	agcagccagt	gtccgggagg	cagaaggtac	cggggcagct	420
actggaggac	tgtgcgggcc	tgccctgggt	gccccctccg	ccgtggggcc	ctggtgtgc	480
tgtccatcta	tttctactac	tccctcccaa	atgcggtcgg	cccgccttc	acttggatgc	540
ttgccctcct	gggccttctc	gcaggcactg	aacatcctcc	tgggcctcaa	gggcctggcc	600
ccagctgaga	tctctgcagt	gtgtgaaaaa	gggaatttca	acgtggccca	tgggctggca	660
tggtcataatt	acatcggata	tctgcggtcg	atcctgccag	agctccaggc	ccggattcga	720
acttacaatc	agcattacaa	caacctgtcta	cggggtgcag	tgagccagcg	gtgtnatatt	780
ctcctcccat	tggactgtgg	ggtgcctgat	aacctgagta	tggctgacct	caacattcgc	840
ttctgtgata	aactgcccc	gcagaccgtg	gcagctgctg	gcatcaagga	tcgggtttac	900
agcaacagca	tctatgagct	tctggagaac	gggcagcggg	cgggcacctg	tgtcctggag	960
tacgccaccc	ccttgacagc	tttgtttgcc	atgtcacaat	acagtcaagc	tggcttttagc	1020
ggggaggata	ggcttgagca	ggccaaactc	ttctgccgga	cacttgagga	catcctggca	1080
gatccccctg	agtctcagaa	caactgccgc	ctcattgcct	accaggaacc	tgcagatgac	1140
agcagcttct	cgctgtccca	ggagggttctc	cggcacctgc	ggcaggagga	aaaggaagag	1200
gttactgttg	gcagcttgaa	gacctcagcg	gtgccagta	cctccacgat	gtcccaagag	1260
cctgagctcc	tcatcagtg	aatggaaaag	ccctccctc	tccgcacgga	tttctcttga	1320
gacccagggt	caccaggcca	gagcctccag	tggtctccaa	gcctctggac	tgggggtctc	1380
cttcagtggc	tgaatgtcca	gcagagctat	ttccttccac	agggggcctt	gcagggaagg	1440
gtccaggact	tgacatctta	agatgcgtct	tgcccccttg	ggccagtcac	ttccccctc	1500
tgagcctcgg	tgtcttcaac	ctgtgaaatg	ggatcataat	cactgcctta	cctccctcac	1560
ggttgttgtg	aggactgagt	gtgtggaagt	ttttcataaa	ctttggatgc	tagtgtactt	1620
agggggtgtg	ccaggtgtct	ttcatggggc	cttccagacc	cactccccac	ccttctcccc	1680
ttcctttgcc	cggggagccc	gaactctctc	aatggtatca	acaggctcct	tcgccctctg	1740
gctcctggtc	atgttccatt	attggggagc	cccagcagaa	gaatggagag	gaggaggagg	1800
ctgagtttgg	ggtattgaat	ccccgggctc	ccacctgca	gcatcaaggt	tgctatggac	1860
tctcctgccg	ggcaactcct	gcgtaatcat	gactatctct	aggattcttg	caccacttcc	1920
ttccctggcc	ccttaagcct	agctgtgtat	cggcaccccc	accccactag	agtactccct	1980
ctcacttgcg	gtttccttat	actccacccc	tttctcaacg	gtcctttttt	aaagcacatc	2040
tcagattaaa	aaaaaaaaaa	aaaaaaaaaa	agggggggcn	gcnt		2084

<210> 288

<211> 720

<212> DNA

<213> Homo sapiens

<400> 288

ggcacgagat	ttctcacaat	gacaaattct	caaataattgc	taatagtact	gtggattttc	60
ctacattggt	aaattgaagg	aattgctaaa	tgctgaattc	agcaaccagt	ttgagattgt	120
tgaaaataaa	gattgtttct	ttttcaatgc	aagttcacag	atcactggag	ttctagctac	180
agtttgttct	agaccagagg	ttgcagatat	ttttgtccta	taaagagaca	catggttaat	240
atttttggct	ttgtgagttg	tatagttttc	gttgtagctg	ttcagctctg	ctacatgaag	300
caaccataga	ccatacctta	acaagtggtc	acttttgagt	accaataaaa	cctttatttag	360
aaataacaga	gggctggatt	tggtcctagt	ttgctgaacc	cttttctaga	tgaaggctcc	420
tcttgccaag	actggctccc	taccttggct	gacaaattct	cactttggga	cttagtcatt	480
gttgtgctc	tctgttatatt	tgcatgtctt	ttctcatggt	taggtgctgt	gtcttaatac	540
ttttttctta	catttaattt	aacaatcatt	actgagcgct	ggtatgtcta	gtttcttttc	600
tcttctttcc	tccttttctt	ttcttttttt	ctttttcttt	atttgaaggc	tctcactctg	660
tcactccagc	ctgggtggca	gaccaggacc	ctgtctctaa	aaaaaaaaaa	aaaaaaaaaa	720

<210> 289

<211> 738

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (646)..(646)

<223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (670)..(670)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (696)..(696)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (707)..(707)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (718)..(718)
 <223> n equals a,t,g, or c

<400> 289	
catcagacca caccagcag tcagaaaaga ggtgcagggg cccgggctgg gacagtgaag	60
agtgcctgggc agtctgtggt cctctgtatc tcaacttttt catcttaaaa aaacaaatag	120
ggttgtgtgt gtggctgggt gtcataaggt cctttctggc tctaataacc tgagcttctg	180
ttatgaagct gggaccctta gaggctcagg atgatcctct gtttgtttgt gaagcccaa	240
tcagggtgcta agcaccatag tggcacttag ctgaagctcc tctgtaactc ctgtgggccc	300
tgccttgccc acccccgaca gctgctgcag tgctcctgag cagcacaggc ctgatggagc	360
ttctggagaa gatgctggcc ctcaccttgg caaaggcaga ttctcccagg actgcactcc	420
tctgctctgc ctggctgctc actgcctcct tctctgccca gcagcacaag ggcagtttgc	480
aggttcacca gacactctct gtggaaatgg accargtatt gaaggctctc agctttccaa	540
agaaaaaggc tgcactactc tcaactgcca tcttatgctt cctgcggaca gccctgac	600
aaagcttttc ctctgcctgg aaccctgggt cccttaaggg ccagncact gcagccacca	660
aggacactgn cctaacttca ctgcgaatgt ccaagnccgg ccctggncat tgggctgnaa	720
aaacctcctg gtgcaaaa	738

<210> 290
 <211> 935
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (6)..(6)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (14)..(14)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (16)..(16)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (50)..(50)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (95)..(95)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (101)..(101)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (139)..(139)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (176)..(176)
 <223> n equals a,t,g, or c

<400> 290
 ggccanctttt tttntngggg aaaaaatggg acccaaaagt tatttgaaan gggctttttc 60
 aagctttttc ccaaaaggaa aaaaagggtt gccantaatt nttcaaggat tgcccatctt 120
 taatgctttc cttggggana agccttgcca caaaagcttt ttcttctgc cctgggnagcc 180
 ctggtgccctt caggggcca gccactgcca gccaccaagg acactgtcct agctccactg 240
 cgaatgtcgc aagtccgggtc cctgggtcatt gggctgcaga acctcctggt gcagaaggac 300
 cctctattgt cccaggcctg tgttggtgc ctggaggcct tgcttgacta cctggatgcc 360
 cggagcccag acattgtctt ccacgtggcc tccagcctt ggaatcgggt ttgtctgttt 420
 accctcttgg atgctggaga gaattccttc ctccagacct agatttttag gctcatgacc 480
 ctgtttatgc ggtaccggag tagcagtgtc ctctctcatg aagaggtggg tgatgttctg 540
 caaggtgtgg ctttggctga cctgtctacc ctctcgaaca ccacactcca ggccctgcat 600
 ggcttcttcc agcagctcca gagcatggga cacctggctg accacagcat ggcccagacc 660
 ctgcaggcct ccttggaggg ccttccccct agcacctcct caggccagcc acccctgcag 720
 gacatgtctt gcctgggagg ggtggctgta tccctgtccc acatcagaaa ctgatcctca 780
 ggacttgaag gcccagaagt ggagagagaa tgagacctgg agacaaaggg cataattgtt 840
 ggggaaatgg atgacagctg aagctattca tatggagcca tatactctat tgttgaaata 900
 gaataaggaa ataaaatgat acactcacia aaaaa 935

<210> 291
 <211> 871
 <212> DNA
 <213> Homo sapiens

<400> 291
 ggcacgaggg aaccacagaag atgctgcctc tcctgatcat ctgtctcctg cctgccattg 60
 aagggaagaa ctgcctccgc tgcgtggccag aactgtctgc cttgatagac tatgacctgc 120
 agatcctctg ggtgaccca gggccacca cagaactttc tcaaagtatt cactccttgt 180
 tcctagagga taataatttt ctcaaaccct ggtaccttga tcgtgaccat ttggaagaag 240
 aaacagccaa attcttctact caagtacacc aagccattaa aacggttacga gatgataaaa 300
 cagtacttct ggaagagatc tacacgcaca agaactctct tactgagagg ctgaataaga 360
 tatctgatgg gctgaaggag aaggagcccc acccctctcc atgaatgcct tcccggctcc 420
 atctctact tgcaccccag aacccttgg cttctgtctg cctccccagc acctcagttt 480
 ctctaccttc taccctccc tggcagcctg caatgagtc tgtgccagga accggcggac 540
 ctccctgtgg gctgtgagtc tcagcagtc tctactcctg gccatagctg gagatgtttc 600
 ttttactggc aaaggaagaa ggaggcagta aaggaacagg gcagcccgcga tgtcttccag 660
 aagtgaacag agggccgcagc taccaccgtc acaaagttca ctcatctctg ggtcccgggtg 720
 accccatccc cccataccct ccactcctggg tctgggggcc ccaaagctct gaggcctagg 780
 agactgcgtt gtctcgtggg ttgcctactc ctacacctt gttaaagagtc tcttcattaa 840
 aaccctctt cataaaaaaa aaaaaaaaaa a 871

<210> 292

<211> 881
 <212> DNA
 <213> Homo sapiens

<400> 292
 gaattcggca cgaggggaacc cagaagatgc tgcctctcct gatcatctgt ctcttgccctg 60
 ccattgaagg gaagaactgc ctccgctgct ggccagaact gtctgccttg atagactatg 120
 acctgcagat cctctgggtg accccagggc caccacaga actttctcaa agtattcact 180
 ccttgctcct agaggataat aattttctca aacctggta ccttgatcgt gaccatttgg 240
 aagaagaaac agccaaattc ttcactcaag tacaccaagc cattaanaacg ttacgagatg 300
 ataaaacagt acttctggaa gagatctaca cgcacaagaa tctctttact gagaggctga 360
 ataagatatc tgatgggctg aaggagaagg gagccccacc cytctccatg aatgccttcc 420
 cggctccatc tcctacttgc accccagaaac cccttggctc tgtctgcctc cccagcacct 480
 cagtttctct accttctcac ctccctggca gcttgcaatg agtctgtgc caggaaccgg 540
 cggacctccc tgtgggctgt gagtctcagc agtgccttac tcctggccat agctggagat 600
 gtttctttta ctggcaaaagg aagaaggagg cagtaaagga acagggcagc ccgcatgtct 660
 tccagaagtg aacagaggcc gcagctacca ccgtcacaaa gttcactcat ctctgggtcc 720
 cggtgacccc atccccccat accctccatc ctgggtcctg gggccccaaa gctctgaggc 780
 ctaggagact gcgctgtctc gtgggttggc tactctaca cctttgtaaa gagtctcttc 840
 attaaaaccc ctcttcataa aaaaaaaaaa aaaaaactcg a 881

<210> 293
 <211> 1598
 <212> DNA
 <213> Homo sapiens

<220>
 <221> misc_feature
 <222> (1067)..(1067)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (1069)..(1069)
 <223> n equals a,t,g, or c

<220>
 <221> misc_feature
 <222> (1577)..(1577)
 <223> n equals a,t,g, or c

<400> 293
 aggaagaac aaagggttatt tcctggagaa aagacaattt attcaacacc aacragggac 60
 tcatcatatg ggcacaactc tgggtgcctt ctatggagaa aacctcaagt aaagtattat 120
 tctgcctttr aaaatgcttc caaaagtaga ccctgtcccc acacagggtca agactacaga 180
 gaaggctttg tagaaatgtg tcacctatgt acacctgcta cttacacatt tcctcttttg 240
 gaaaaatgag atacttagaa taacargaaa attaagacat actggcctgg tgccagcaga 300
 tggcctttct atagacaaac taggttagtg tggaagatat aggttaaaat aaactatgct 360
 gttttattta tcttcccaac ctgattggca gctagacttt tttagggtct catttaattg 420
 ccctgttttt ttcattatta tatttaatga tagggcagga tttcgtatgc aagctcttgt 480
 ttctcaggct gcctgcagaa gaagtcgcta taaattatct gttgtctaca tgggtacaagg 540
 cccattgact catctgatgc ttgttttgtt aatttcttta atatttttat cacggggcag 600
 tgggagggtc tgggctttta gccacagctg ttttaagact tctgatctcc tgcctgcag 660
 gaatagggtg gaagtcattg aatttttaca ctatagtaat ttgcattccc acataagttt 720
 gagtgttacg aaaacattcc tttaaagggg tctgtgtctac aaaaaatag ccaggacctc 780
 acagacaaag ccattgctag aaatgtcatt ccaatgatca gatctggaaa caggctgcc 840
 taaccacttt tccttcttgt agactcagc cacctgtata tttaaactgt tcttggcatc 900
 ttgaaacacc ttttctact caggtaactc ttgtcctgtt actgattcac ctttctgatc 960
 cttttcaacc agttttcccc caagggggga aattttactt aacctctagt atttgaacaa 1020
 ctcaatattt gaattgttgc cccatttgcct tttacctgta ctgtatnct ggtcatctca 1080
 aatggcgtct aaaccagct actttgcatt ccagaagttt ccattccctc caattccacc 1140

taat	ttttca	tctgtcctag	ttactggctc	tttcttcattg	tcttatttct	cttgcttttg	1200
gagc	ttaaaa	gattttacaa	gacctaat	ttgggttcctt	ccttggagcc	atagttaccc	1260
tgcca	aagaag	agtagaaaat	gggttcaact	cctgttttcgc	tccaccaaca	cctctgtgag	1320
tctcat	catc	agctgagcga	tgatgcctta	caggttgcat	agcactggaa	ctttcctaga	1380
gtaac	ggctc	tgctgccagg	gtttctctgg	gctcattctt	ccactgactt	aattatgac	1440
tatgc	cctaac	agagccccag	tacaactatt	ttgcagaatg	gctgttaccc	tagaattact	1500
atagc	acata	ttgagatata	gttgtactcc	ctagtagata	ggaactgacc	ccaacaataa	1560
acttt	gataa	taaaganaaa	aaaaaaaaa	actcgtag			1598

<210> 294

<211> 530

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (517)..(517)

<223> n equals a,t,g, or c

<400> 294

gcct	ggcaga	gagactctga	aatgagggat	tagaggtgtt	caaggagcaa	gagcttcagc	60
ctga	agacaa	gggagcagtc	cctgaagacg	cttctactga	gaggtctgcc	atggcctctc	120
ttgg	cctcca	acttgtgggc	tacatcctag	gccttctggg	gcttttgggc	acactggttg	180
ccat	gctgct	ccccagctgg	aaaacaagtt	cttatgtcgg	tgccagcatt	gtgacagcag	240
ttgg	cttctc	caagggcctc	tggaagggaat	gtgccacaca	cagcacaggc	atcaccagc	300
gtgac	atcta	tagcaccctt	ctgggcctgc	ccgctgacat	ccaggctgcc	caggccatga	360
tggt	gacatc	cagtgcacac	tcctccctgg	cctgcattat	ctctgtgggtg	ggcatgagat	420
gcac	agctct	ctgccaggaa	tcccagagcca	aagacagagt	ggcggtagca	ggtggagtct	480
tttt	catcct	tggaaagcctc	ctgggattca	ttcctgntgc	ctggaatctt		530

<210> 295

<211> 1046

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (14)..(14)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (33)..(33)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (441)..(441)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (460)..(460)

<223> n equals a,t,g, or c

<400> 295

gaga	agtcag	cctngcagag	agactctgaa	atnagggatt	agaggtgttc	aaggagcaag	60
agct	tcagcc	tgcaagacaa	gggagcagtc	cctgaagacg	cttctactca	ccactgggtgc	120
ctga	cagcat	gaaatttgag	attggagagg	ctctttactt	gggcattatt	tcttcctgt	180
tctc	cctgat	akctggaatc	atcctctgct	tttctgtctc	atcccagaga	aatcgctcca	240
acta	ctacga	tgcctaccaa	gcccacctc	ttgccacaag	gagctctcca	aggcctgggtc	300

```

aacctcccaa agtcaagagt gagttcaatt cctacagcyt gacaggggat gtgtgaagaa 360
ccagggggcca garctggggg ktggctgggt ctgtgaaaaa cagtggacag caccgccagg 420
ccacagggtga gggacattac nactggatcg tgtcagaagn tgctgctgag gatagactga 480
ctttggccat tggattgagc aaaggcagaa atggggggcta gtgtaacagc atgcaggttg 540
aattgccaaag gatgctcgcc atgccagcct ttctgttttc ctcaccttgc tgstcccctg 600
ccctaagtc ccaaccctca acttgaaacc ccattccctt aagccaggac tcagaggatc 660
cctttgccct ctggtttacc tgggactcca tcccaaaacc cactaatcac atcccactga 720
ctgaccctct gtgatcaaag accctctctc tggctgaggt tggctcttag ctcatgtctg 780
gggatgggaa ggagaagcag tggcttttgt gggcattgct ctaacctact tctcaagctt 840
ccctccaaag aaactgattg gccctggaac ctccatccca ctcttgttat gactccacag 900
tgtccagact aatttgtgca tgaactgaaa taaaaccatc ctacgggtatc cagggaacag 960
aaagcaggat gcaggatggg aggacaggaa ggcagcctgg gacattttaa aaaaaaaaaa 1020
aaaaaactcg aggggggggc cgttac 1046

```

<210> 296

<211> 819

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (786)..(786)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (819)..(819)

<223> n equals a,t,g, or c

<400> 296

```

aattcggcac gagctcaaag agtaagaatc caagtgtgtg acattacata gctttgcatc 60
tatggaaacc taaatcataa ttgtttccac tgcccaatta tgttcctttt cataacattt 120
actattctgg ctatatattat catagaacct aggaacctta gagttgacct gaatctaatt 180
aaatttcaga cctcctggcc aaagacccta gtggaagagc aaaactaaat caacatatta 240
ccaatctcaa gtatttctct gaggaccag accactgact ttttgttgtc attttcagggt 300
tgatctcata actgtatgtt ctacaatata tgtgctccac cagctcagtg aggaatcaac 360
ggaatatcaa aagtaaatat tggtcacat ataccttttg gtactagtct acgaaataat 420
tggctgagga actgtttcat attaaagaaa agctaaaagc aatgtgtgat cttagattag 480
acctatgatt ggaatgtatg tatattttat atacaaaata ttgaggaaat tgacaaaatt 540
taaatacaga atatggatta gataatagga atgtatcaag gtcaatattt aaaaagataa 600
tttcaacttt tattttattc agtgggtaca tgtgcagact ttgttttaca tagtacccaa 660
cagtttttca acgcttatcc cccaccctct agtaatctgc agwgwctatt attgycatct 720
tcgtggctat tgtacatggg atccatactt gattttgtct tcaacatgaa cattattgggt 780
gtaganaaat gccactaagt tttkgtacgt tggcttttn 819

```

<210> 297

<211> 501

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)..(2)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (12)..(12)

<223> n equals a,t,g, or c

<400> 297

nnccccccaa	tnatatTTTT	ccaaattaat	tccaacatag	gaaggattcc	accttcctag	60
tatgttttca	aattgtttca	aacctgacct	ctttttgatt	gctctacctt	ccaaaagaaa	120
agaagggaac	actaatTTTC	ttycctgatt	tacttccattg	ttttcttctg	ttagattaac	180
tttacctata	aaagattgtc	tcttgacttt	atatatatat	atatgtgtgt	gtgtgtgtgt	240
gtgtgtgtgt	gtgtgtgtgt	gtgtgtgtat	ttgaagagga	catgtgcctc	cataaaagga	300
aataaaatga	gagaatacat	tattgatttt	gtgaaatcaa	aatatttgaa	ttatggtttc	360
tcaatattca	aaaactcttg	cagtttctgt	acttatttct	tctgatgcat	agagtttcgg	420
ggactacata	tgtttcacia	ccaaagatat	ccacttgaaa	taaaaacatt	ataaagttaa	480
aaaaaaaaaa	aaaaactcga	g				501

<210> 298

<211> 3306

<212> DNA

<213> Homo sapiens

<400> 298

ccacgcgtcc	ggcccagggc	tgtctgtctc	caaagcccaa	ccataactca	catccccatt	60
ccagctcctc	tgggtgagtc	tgttccccct	cagcctcact	ttccttatcc	tgtcaaatga	120
aggatttgga	atgacttaag	ttattcaagc	aacaaacact	tactgaattg	tcttgccact	180
tccaggggtga	cattatggag	ttctgtgatt	ctgcaagagg	ccagagggga	caagggtcaag	240
tgggtgttca	cctggcccct	catcttcctc	ctgtgcgtca	ccattcccaa	ctgcagcaag	300
ccccgcctgg	agaagtctct	catggtcacc	ttcatcaacg	ccacgctgtg	gatcgctgtg	360
ttctcctaca	tcattggtgtg	gctggtgact	attatcggat	acacacttgg	gatccccgat	420
gtcatcatgg	gcattacttt	cctggcagca	ggacaagtgt	tccagactgc	atggccagcc	480
taattgtggc	gagacaaggc	cttggggaca	tggcagtcct	caacaccata	gaagcaacgt	540
gtttgacatc	ctggtaggac	ttggtgtacc	gtggggcctg	cagaccatgg	ttgttaatta	600
tggatcaaca	gtgaagatca	acagccgggg	gctggtctat	tccgtgggtc	tgttgctggg	660
ctctgtcgct	ctcacgctcc	tcggcatcca	cctaaacaag	tggcgactgg	accggaagct	720
gggtgtctac	gtgctggttc	tctacgccat	cttcttgtgc	ttctccataa	tgatagagtt	780
taacgtcttt	accttcgtca	acttgccgat	gtgccgggaa	gacgattagc	gctgagtcgc	840
ggccccctgg	agctgatctg	gacaccctgt	gacactggcg	tcctcctctc	ccctccttcc	900
cccaccacag	gtctctcctg	cataggcagc	cactgtccgt	tccttcacac	actggaagga	960
agagccatcg	tggctcttgt	ctggccacag	ccaagctgct	gggcacccct	ctcctccttg	1020
gagttccacc	cctgcaaggc	tggatttggg	ggccattatc	tgagcagctt	caaagacccc	1080
tgagctgcca	accacggaga	tgtgccaagc	atctcatctc	tcctgcacac	tttagtcaga	1140
aggacttctg	catgcagttt	gtctttctgt	tctgcaggca	gcttcagaat	tgagggtcatt	1200
tgtgagcaca	agatctcata	gggcaggtgc	aaaataggaa	tgttgttctc	aagtgtcacc	1260
tccagcccag	aggtggttcc	ttaggcagca	tgtgctcctg	ggagcctctg	acttttgtctg	1320
gaagcaccga	cagtttggaa	ggggcaagac	ctcaacctgt	tgggggttag	ggccccatgat	1380
ggcagacatt	ctaccccttt	tcctggaaaa	actggaagaa	tgaataataat	ttttttctgt	1440
ggaagagaga	aatgagtga	atattcttct	cacttttatt	gatgcattca	gagaataagc	1500
aatgaaatat	taaaaaatga	aacatcatat	aggtcatcat	acttgaaaat	tatcattcca	1560
tatgaaagga	tcattgataca	cacaaaaaaa	gtaatgatcg	taaagacaca	aatcctctgt	1620
atgccatctt	gcattggcac	tgagggtgtt	ggtttggaat	agggaataag	agacaggatc	1680
tcgctgtgtt	ccccaggtag	gtcttgaact	cctggcctca	agtgatectc	ctgccttgac	1740
ctcccaaagt	gctggattac	aagcgtgagc	ccctgcaccc	ggcccaagca	gttgcttctt	1800
tttttctctt	tttttttttt	tttgagatgg	agcctcactc	tgttgcccag	gctggagtgc	1860
agtggcgcgga	tctccactca	ctgcaagctc	cgcctcccgg	gttcatgcca	ttctcctgcc	1920
tcagcctccc	gagtagctgg	gactacaggc	gcctgccacc	acaccagct	aattttttgt	1980
atttttggta	cagacagggg	ttcaccgtgt	attaccaggat	ggtcttgatc	tctgatctcg	2040
gatccgccac	cccggcctcc	aaagtgtctg	attacaagcg	tgagccaccg	ggccccgccca	2100
agcagttgct	tcttatgcaa	catgttgggt	gggacttgct	cacggggccag	gccaaataaaa	2160
ttcttaatcc	tgcagagagc	agtaccctca	tcaccccatc	actggaaaac	aaatgtttta	2220
gctatcaaga	gagggaaatgt	gcagcttggg	tctagatgca	tggtttggag	gatctacctt	2280
ggcctaaagg	gaatgtccca	aacaacagag	ccttctttgc	tgcactccag	aattctctac	2340
acagaatttc	ccaagtccat	tcaggacaga	cgcgcagtc	tctttcaatg	gaagaagaga	2400
ggacttttcc	cctcctgaaa	aatgactgga	gtgtgaacaa	ggcagctctg	tttttctaaa	2460
taagttgttc	tgttgagttt	tttctggcca	ctgggcatct	ctgccctcac	ttttcatccc	2520
tgcctcttaa	gctgcagacc	ccatgaccac	actgtctgct	tccttgagct	tcccgcacga	2580
ggcttgaccc	tgggggacct	ggagaccctg	cggacagaac	tgtggctgag	ccactgtggc	2640
caactcttgg	ggagctccac	agtgggggtt	gctggtctgt	gaggctgagt	ctccatttca	2700

```

gagcacacac tccctggcag ggcgcctccg cctgtgtctc ctgcccagca gccgccagca 2760
gggaatagtt gctggtgtct gagcacaag agagctttga ttacctagag aggaaaaagg 2820
ctgtcagcca gatgcagcca ggcccagggg tagatacagg agttgctaag gaaggggccc 2880
agccaggaga ggccaggcag atccacaaag cccaagggga tgcaggctgg gtgtggtttc 2940
tgagggaacc taccaaatag caggtagatg gaatcagagg actcttgtgt cctgaaagaa 3000
cctccttaaa aacaactaaa accaagaact tctggggctg ttcacacatt gttcaagtca 3060
ccccaagatc gttctggcac gctgagctga acaccacat ctttgttcac tctctctcta 3120
atggggcaaag caggatcatc gagttgaaaa gttgtaaata atgaggatat ttatcccgtc 3180
atattttttt tcaataactg tgacctcctg cactgtgaat gctctgtgac atgagattct 3240
tagttttaata aaactgtcat taaatttgaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa 3300
aaaaaa 3306

```

```

<210> 299
<211> 2194
<212> DNA
<213> Homo sapiens

```

```

<220>
<221> misc_feature
<222> (441)..(441)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (987)..(987)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (2034)..(2034)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (2041)..(2041)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (2121)..(2121)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (2169)..(2169)
<223> n equals a,t,g, or c

```

```

<220>
<221> misc_feature
<222> (2184)..(2184)
<223> n equals a,t,g, or c

```

```

<400> 299
ggcccagggc tgtctgtctc caaagcccaa ccataactca catccccatt ccagctcctc 60
tgggtgagtc tgttccccct cagcctcact ttcccttatcc tgtcaaata aggatttga 120
atgacttaag ttattcaagc aacaaacact tactgaattg tcttgccact tccaggtga 180
cattatggag ttctgtgatt ctgcaagagg ccagagggga caaggtcaag tgggtgttca 240
cctggccctc catcttcctc ctgtgcgtca ccattcccaa ctgcagcaag ccccgctggg 300
agaagtctct catggtcacg ttcacacatt ccagctgtg gatcgctgtg ttctcctaca 360
tcatggtgtg gctggtgact attatcggat acacacttgg gatcccgat gtcacatgg 420
gcattamttt cctggcagca nggacaagtg ttccagactg catggccagc ctaattgtgg 480

```

```

cgagacaagg ccttgggggac atggcagtcct ccaacacyat aaraagcaac gtgtttgaca 540
tcctggtagg acttgggtgta ccgtgggggcc tgcagacccat gggtgttaat tatggatcaa 600
cagtgaagat caacagccgg gggctgggtct attccgtgggt cctgttgctg ggctctgtcg 660
ctctcaccgt cctcgggcatc cacctaaaca agtggcgact ggaccggaag ctgggtgtct 720
acgtgctggg tctctacgcc atcttcttgg gcttctccat aatgataagag tttaacgtct 780
ttacccttct caacttgccg atgtgcccgg aagacgatta gcgctgagtc gcggccctg 840
ggagctgata tggacaccct gtgacactgg cgctctctc tccctctctt cccccaccac 900
aggctctctc tgcattaggca gccactgtcc gttctttcac aacttggaag gaagagccat 960
cgtgtgtctt gtctggccac agggccangct gctgggcatc ctctctctcc ttggagtctc 1020
acccttgsaa ggcygatttg ggggccatta tctgagcagc ttcaaagacc cctgarctgc 1080
caaccacgga gatgtgcaa gcactctcat tctcttgca actttagtca gaaggacttc 1140
tgcatgcagt ttgtctttct gttctgcagg cagcttcaga attgaggtca tttgtgagca 1200
caagatctca tagggcagg gcaaaatagg aatgttgttc tcaagtgtca cctccagccc 1260
agaggtgggt ccttaggcag catgtgctcc tgggagcctc tgacttttgc tggagacc 1320
cacagtttgg aaggggcaag acctcaacct gttgggggtt agggcccatg atggcagaca 1380
ttctaccctt ttctctggaa aaactggaag aatgaaaatm attttttct gtggaagaga 1440
gaaaatgagt gaatatycct ctacttttta ttgatgcatt cagagaataa gcaatgaaat 1500
attaaaaaat gaaacatcat ataggtcatc atacttgaaa attatcattc catatgaaag 1560
gatcatgata cacaccaaaa aagtaatgat cgtaaagaca caaatcctct gtatgccatc 1620
ttgcattggc actgaggtgt ttggtttgga atagggaaaa agagacagga tctcgctgtg 1680
ttcccagggt aggtcttgaa ctctggcct caagtgtacc tctgccttg acctcccaa 1740
gtgctggatt acaagcgtga gccctgcac ccggcgccaa gcagttgctt cttttttct 1800
cttttttttt ttttttgaga tggagcctca ctctgttgcc caggctggag tgcagtggcg 1860
cgatctccac tcaactgcaag ctccgcctcc cgggttcatg ccattctcct gcctcagcct 1920
cccgagtagc tgggactaca ggcgcctgcc accacacca gctaattttt tgtatttttg 1980
gtacagacag ggtttcacccg tgttagccag gatgggtctt atctctgatc tcgngatccg 2040
nccaccccg ccttccaaag tgcttgatt acaagcgtga gccacccggg ccccgccaag 2100
caagttgctt cttatgcaac natgttgggt tggggacttg gtccacgggg cccaggccca 2160
ataaaaaatnc tttaatccct gcanaagagg ccag 2194

```

<210> 300

<211> 207

<212> PRT

<213> Homo sapiens

<400> 300

```

Met Ile Lys His Val Ala Trp Leu Ile Phe Thr Asn Cys Ile Phe Phe
  1             5             10            15

```

```

Cys Pro Val Ala Phe Phe Ser Phe Ala Pro Leu Ile Thr Ala Ile Ser
          20             25            30

```

```

Ile Ser Pro Glu Ile Met Lys Ser Val Thr Leu Ile Phe Phe Pro Leu
  35             40            45

```

```

Pro Ala Cys Leu Asn Pro Val Leu Tyr Val Phe Phe Asn Pro Lys Phe
  50             55            60

```

```

Lys Glu Asp Trp Lys Leu Leu Lys Arg Arg Val Thr Lys Lys Ser Gly
  65             70            75            80

```

```

Ser Val Ser Val Ser Ile Ser Ser Gln Gly Gly Cys Leu Glu Gln Asp
          85             90            95

```

```

Phe Tyr Tyr Asp Cys Gly Met Tyr Ser His Leu Gln Gly Asn Leu Thr
 100             105            110

```

```

Val Cys Asp Cys Cys Glu Ser Phe Leu Leu Thr Lys Pro Val Ser Cys
 115             120            125

```

```

Lys His Leu Ile Lys Ser His Ser Cys Pro Ala Leu Ala Val Ala Ser

```

130 135 140
 Cys Gln Arg Pro Glu Gly Tyr Trp Ser Asp Cys Gly Thr Gln Ser Ala
 145 150 155 160
 His Ser Asp Tyr Ala Asp Glu Glu Asp Ser Phe Val Ser Asp Ser Ser
 165 170 175
 Asp Gln Val Gln Ala Cys Gly Arg Ala Cys Phe Tyr Gln Ser Arg Gly
 180 185 190
 Phe Pro Leu Val Arg Tyr Ala Tyr Asn Leu Pro Arg Val Lys Asp
 195 200 205

<210> 301
 <211> 114
 <212> PRT
 <213> Homo sapiens

 <220>
 <221> SITE
 <222> (13)
 <223> Xaa equals any amino acid

<400> 301
 Met Ala Gly Pro Arg Ala Ser Thr Gly Pro Arg Pro Xaa Cys Leu Val
 1 5 10 15
 Leu Phe Leu Phe Asn Phe Ile Phe Cys Phe Met Ser Val Cys Pro Pro
 20 25 30
 Thr Pro Thr Pro Phe Ser Val Lys Trp Gly Ala Leu Gly Glu Ser Leu
 35 40 45
 Leu Pro Pro Ser Leu Ser Gln Asp Leu Pro Pro Arg His Gln Pro Ser
 50 55 60
 Leu Trp Thr Arg Gln Arg Ala Asp Arg Val Gly Arg Gly Leu Arg Val
 65 70 75 80
 Ala Arg Ala Ser Pro Pro Ala Asn Gly Pro Leu Leu Arg Pro Pro Val
 85 90 95
 Ser Pro Cys Pro Phe Leu Lys Gln Asn Ala Leu Val Cys Lys Pro Leu
 100 105 110
 Asp Ala

<210> 302
 <211> 49
 <212> PRT
 <213> Homo sapiens

<400> 302
 Met Arg Leu Cys Ser Phe Thr Lys Val Pro Met Asn Leu Phe Leu Asn
 1 5 10 15

Val Ile Leu Leu Lys Phe Tyr Asn Phe Leu Phe Ser Leu Ile Leu Gly
 20 25 30

Lys Ser Cys Leu Ala Ser Leu Gly Leu Cys Lys Asn Asn Lys Cys Leu
 35 40 45

Ser

<210> 303
 <211> 62
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (16)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (54)
 <223> Xaa equals any amino acid

<400> 303
 Met Val Thr Gly Phe Phe Phe Ile Leu Met Thr Val Leu Trp Phe Xaa
 1 5 10 15

Arg Glu Pro Gly Phe Val Pro Gly Trp Asp Ser Phe Phe Glu Lys Lys
 20 25 30

Gly Tyr Arg Thr Asp Ala Thr Val Ser Val Phe Leu Gly Phe Leu Leu
 35 40 45

Phe Leu Ile Pro Ala Xaa Glu Ala Leu Leu Trp Glu Lys Glu
 50 55 60

<210> 304
 <211> 122
 <212> PRT
 <213> Homo sapiens

<400> 304
 Met Cys Tyr Leu Leu Leu Leu Ile Gln Thr Ala Glu Leu Leu Ile
 1 5 10 15

His Pro Gln Gly Leu Gln Ala Val Ser Asn Gly Glu Ser Ala Leu Lys
 20 25 30

Gly Thr Arg Pro Thr Phe Ser Ser Pro Phe Ile Leu Val Thr Glu Gly
 35 40 45

Arg Lys Glu Trp Glu Gly Val Phe Leu Ser Ser Gly Trp Lys Gly Asn
 50 55 60

Thr Leu Ser Asn Tyr Tyr Ile Ser Leu Val Phe Tyr Tyr Ser Arg Ile

65 70 75 80
 Leu Gln Pro Tyr Phe Tyr Cys Leu Trp Gly Lys Leu Glu Met Val Thr
 85 90 95
 Leu Ile Arg Ser Val Trp Arg Gly Ile Asn Gly Gly Asp Lys Ile Gln
 100 105 110
 Leu Val Leu Glu Asn Val Lys Val Leu Lys
 115 120

<210> 305
 <211> 563
 <212> PRT
 <213> Homo sapiens

<400> 305
 Met Trp Ala Val Leu Arg Leu Ala Leu Arg Pro Cys Ala Arg Ala Ser
 1 5 10 15
 Pro Ala Gly Pro Arg Ala Tyr His Gly Asp Ser Val Ala Ser Leu Gly
 20 25 30
 Thr Gln Pro Asp Leu Gly Ser Ala Leu Tyr Gln Glu Asn Tyr Lys Gln
 35 40 45
 Met Lys Ala Leu Val Asn Gln Leu His Glu Arg Val Glu His Ile Lys
 50 55 60
 Leu Gly Gly Gly Glu Lys Ala Arg Ala Leu His Ile Ser Arg Gly Lys
 65 70 75 80
 Leu Leu Pro Arg Glu Arg Ile Asp Asn Leu Ile Asp Pro Gly Ser Pro
 85 90 95
 Phe Leu Glu Leu Ser Gln Phe Ala Gly Tyr Gln Leu Tyr Asp Asn Glu
 100 105 110
 Glu Val Pro Gly Gly Gly Ile Ile Thr Gly Ile Gly Arg Val Ser Gly
 115 120 125
 Val Glu Cys Met Ile Ile Ala Asn Asp Ala Thr Val Lys Gly Gly Ala
 130 135 140
 Tyr Tyr Pro Val Thr Val Lys Lys Gln Leu Arg Ala Gln Glu Ile Ala
 145 150 155 160
 Met Gln Asn Arg Leu Pro Cys Ile Tyr Leu Val Asp Ser Gly Gly Ala
 165 170 175
 Tyr Leu Pro Arg Gln Ala Asp Val Phe Pro Asp Arg Asp His Phe Gly
 180 185 190
 Arg Thr Phe Tyr Asn Gln Ala Ile Met Ser Ser Lys Asn Ile Ala Gln
 195 200 205
 Ile Ala Val Val Met Gly Ser Cys Thr Ala Gly Gly Ala Tyr Val Pro
 210 215 220

Ala Met Ala Asp Glu Asn Ile Ile Val Arg Lys Gln Gly Thr Ile Phe
 225 230 235 240
 Leu Ala Gly Pro Pro Leu Val Lys Ala Ala Thr Gly Glu Glu Val Ser
 245 250 255
 Ala Glu Asp Leu Gly Gly Ala Asp Leu His Cys Arg Lys Ser Gly Val
 260 265 270
 Ser Asp His Trp Ala Leu Asp Asp His His Ala Leu His Leu Thr Arg
 275 280 285
 Lys Val Val Arg Asn Leu Asn Tyr Gln Lys Lys Leu Asp Val Thr Ile
 290 295 300
 Glu Pro Ser Glu Glu Pro Leu Phe Pro Ala Asp Glu Leu Tyr Gly Ile
 305 310 315 320
 Val Gly Ala Asn Leu Lys Arg Ser Phe Asp Val Arg Glu Val Ile Ala
 325 330 335
 Arg Ile Val Asp Gly Ser Arg Phe Thr Glu Phe Lys Ala Phe Tyr Gly
 340 345 350
 Asp Thr Leu Val Thr Gly Phe Ala Arg Ile Phe Gly Tyr Pro Val Gly
 355 360 365
 Ile Val Gly Asn Asn Gly Val Leu Phe Ser Glu Ser Ala Lys Lys Gly
 370 375 380
 Thr His Phe Val Gln Leu Cys Cys Gln Arg Asn Ile Pro Leu Leu Phe
 385 390 395 400
 Leu Gln Asn Ile Thr Gly Phe Met Val Gly Arg Glu Tyr Glu Ala Glu
 405 410 415
 Gly Ile Ala Lys Asp Gly Ala Lys Met Val Ala Ala Val Ala Cys Ala
 420 425 430
 Gln Val Pro Lys Ile Thr Leu Ile Ile Gly Gly Ser Tyr Gly Ala Gly
 435 440 445
 Asn Tyr Gly Met Cys Gly Arg Ala Tyr Ser Pro Arg Phe Leu Tyr Ile
 450 455 460
 Trp Pro Asn Ala Arg Ile Ser Val Met Gly Gly Glu Gln Ala Ala Asn
 465 470 475 480
 Val Leu Ala Thr Ile Thr Lys Asp Gln Arg Ala Arg Glu Gly Lys Gln
 485 490 495
 Phe Ser Ser Ala Asp Glu Ala Ala Leu Lys Glu Pro Ile Ile Lys Lys
 500 505 510
 Phe Glu Glu Glu Gly Asn Pro Tyr Tyr Ser Ser Ala Arg Val Trp Asp
 515 520 525
 Asp Gly Ile Ile Asp Pro Ala Asp Thr Arg Leu Val Leu Gly Leu Ser
 530 535 540
 Phe Ser Ala Ala Leu Asn Ala Pro Ile Glu Lys Thr Asp Phe Gly Ile

545 550 555 560
 Phe Arg Met

<210> 306
 <211> 53
 <212> PRT
 <213> Homo sapiens

<400> 306
 Met Val Gln Phe Glu Val Ile Phe Leu Leu Phe Gly Leu Cys Phe Ser
 1 5 10 15
 Ser Ser Ser Ser Arg Leu Val Gly Ser Gln Val Glu Asn Phe Ser Pro
 20 25 30
 Thr Pro Cys Ile Phe Gln Ala Phe Arg Cys Ser Ser Leu Ala Ile Ile
 35 40 45
 Ser Met Ser Leu Ser
 50

<210> 307
 <211> 421
 <212> PRT
 <213> Homo sapiens

<400> 307
 Met Thr Val Phe Phe Lys Thr Leu Arg Asn His Trp Lys Lys Thr Thr
 1 5 10 15
 Ala Gly Leu Cys Leu Leu Thr Trp Gly Gly His Trp Leu Tyr Gly Lys
 20 25 30
 His Cys Asp Asn Leu Leu Arg Arg Ala Ala Cys Gln Glu Ala Gln Val
 35 40 45
 Phe Gly Asn Gln Leu Ile Pro Pro Asn Ala Gln Val Lys Lys Ala Thr
 50 55 60
 Val Phe Ser Ile Leu Gln Leu Ala Lys Glu Lys Pro Gly Leu Tyr Leu
 65 70 75 80
 Lys Lys Met Leu Pro Asp Phe Thr Phe Ile Trp His Gly Cys Asp Tyr
 85 90 95
 Cys Lys Thr Asp Tyr Glu Gly Gln Ala Lys Lys Leu Leu Glu Leu Met
 100 105 110
 Glu Asn Thr Asp Val Ile Ile Val Ala Gly Gly Asp Gly Thr Leu Gln
 115 120 125
 Glu Val Val Thr Gly Val Leu Arg Arg Thr Asp Glu Ala Thr Phe Ser
 130 135 140
 Lys Ile Pro Ile Gly Phe Ile Pro Leu Gly Glu Thr Ser Ser Leu Ser

145		150		155		160
His Thr Leu Phe Ala Glu Ser Gly Asn Lys Val Gln His Ile Thr Asp						
	165		170		175	
Ala Thr Leu Ala Ile Val Lys Gly Glu Thr Val Pro Leu Asp Val Leu						
	180		185		190	
Gln Ile Lys Gly Glu Lys Glu Gln Pro Val Phe Ala Met Thr Gly Leu						
	195		200		205	
Arg Trp Gly Ser Phe Arg Asp Ala Gly Val Lys Val Ser Lys Tyr Trp						
	210		215		220	
Tyr Leu Gly Pro Leu Lys Ile Lys Ala Ala His Phe Phe Ser Thr Leu						
	225		230		235	240
Lys Glu Trp Pro Gln Thr His Gln Ala Ser Ile Ser Tyr Thr Gly Pro						
		245		250		255
Thr Glu Arg Pro Pro Asn Glu Pro Glu Glu Thr Pro Val Gln Arg Pro						
		260		265		270
Ser Leu Tyr Arg Arg Ile Leu Arg Arg Leu Ala Ser Tyr Trp Ala Gln						
	275		280		285	
Pro Gln Asp Ala Leu Ser Gln Glu Val Ser Pro Glu Val Trp Lys Asp						
	290		295		300	
Val Gln Leu Ser Thr Ile Glu Leu Ser Ile Thr Thr Arg Asn Asn Gln						
	305		310		315	320
Leu Asp Pro Thr Ser Lys Glu Asp Phe Leu Asn Ile Cys Ile Glu Pro						
		325		330		335
Asp Thr Ile Ser Lys Gly Asp Phe Ile Thr Ile Gly Ser Arg Lys Val						
	340		345		350	
Arg Asn Pro Lys Leu His Val Glu Gly Thr Glu Cys Leu Gln Ala Ser						
	355		360		365	
Gln Cys Thr Leu Leu Ile Pro Glu Gly Ala Gly Gly Ser Phe Ser Ile						
	370		375		380	
Asp Ser Glu Glu Tyr Glu Ala Met Pro Val Glu Val Lys Leu Leu Pro						
	385		390		395	400
Arg Lys Leu Gln Phe Phe Cys Asp Pro Arg Lys Arg Glu Gln Met Leu						
		405		410		415
Thr Ser Pro Thr Gln						
	420					

<210> 308

<211> 242

<212> PRT

<213> Homo sapiens

<400> 308

Met Gln Leu Gly Ser Val Leu Leu Thr Arg Cys Pro Phe Trp Gly Cys
 1 5 10 15
 Phe Ser Gln Leu Met Leu Tyr Ala Glu Arg Ala Glu Ala Arg Arg Lys
 20 25 30
 Pro Asp Ile Pro Val Pro Tyr Leu Tyr Phe Asp Met Gly Ala Ala Val
 35 40 45
 Leu Cys Ala Ser Phe Met Ser Phe Gly Val Lys Arg Arg Trp Phe Ala
 50 55 60
 Leu Gly Ala Ala Leu Gln Leu Ala Ile Ser Thr Tyr Ala Ala Tyr Ile
 65 70 75 80
 Gly Gly Tyr Val His Tyr Gly Asp Trp Leu Lys Val Arg Met Tyr Ser
 85 90 95
 Arg Thr Val Ala Ile Ile Gly Gly Phe Leu Val Leu Ala Ser Gly Ala
 100 105 110
 Gly Glu Leu Tyr Arg Arg Lys Pro Arg Ser Arg Ser Leu Gln Ser Thr
 115 120 125
 Gly Gln Val Phe Leu Gly Ile Tyr Leu Ile Cys Val Ala Tyr Ser Leu
 130 135 140
 Gln His Ser Lys Glu Asp Arg Leu Ala Tyr Leu Asn His Leu Pro Gly
 145 150 155 160
 Gly Glu Leu Met Ile Gln Leu Phe Phe Val Leu Tyr Gly Ile Leu Ala
 165 170 175
 Leu Ala Phe Leu Ser Gly Tyr Tyr Val Thr Leu Ala Ala Gln Ile Leu
 180 185 190
 Ala Val Leu Leu Pro Pro Val Met Leu Leu Ile Asp Gly Asn Val Ala
 195 200 205
 Tyr Trp His Asn Thr Arg Arg Val Glu Phe Trp Asn Gln Met Lys Leu
 210 215 220
 Leu Gly Glu Ser Val Gly Ile Phe Gly Thr Ala Val Ile Leu Ala Thr
 225 230 235 240
 Asp Gly

<210> 309

<211> 189

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (94)

<223> Xaa equals any amino acid

<400> 309

Met Ala Leu Leu Ser Arg Pro Ala Leu Thr Leu Leu Leu Leu Leu Met
 1 5 10 15
 Ala Ala Val Val Arg Cys Gln Glu Gln Ala Gln Thr Thr Asp Trp Arg
 20 25 30
 Ala Thr Leu Lys Thr Ile Arg Asn Gly Val His Lys Ile Asp Thr Tyr
 35 40 45
 Leu Asn Ala Ala Leu Asp Leu Leu Gly Gly Glu Asp Gly Leu Cys Gln
 50 55 60
 Tyr Lys Cys Ser Asp Gly Ser Lys Pro Phe Pro Arg Tyr Gly Tyr Lys
 65 70 75 80
 Pro Ser Pro Pro Asn Gly Cys Gly Ser Pro Leu Phe Gly Xaa His Leu
 85 90 95
 Asn Ile Gly Ile Pro Ser Leu Thr Lys Cys Cys Asn Gln His Asp Arg
 100 105 110
 Cys Tyr Glu Thr Cys Gly Lys Ser Lys Asn Asp Cys Asp Glu Glu Phe
 115 120 125
 Gln Tyr Cys Leu Ser Lys Ile Cys Arg Asp Val Gln Lys Thr Leu Gly
 130 135 140
 Leu Thr Gln His Val Gln Ala Cys Glu Thr Thr Val Glu Leu Leu Phe
 145 150 155 160
 Asp Ser Val Ile His Leu Gly Cys Lys Pro Tyr Leu Asp Ser Gln Arg
 165 170 175
 Ala Ala Cys Arg Cys His Tyr Glu Glu Lys Thr Asp Leu
 180 185

<210> 310

<211> 64

<212> PRT

<213> Homo sapiens

<400> 310

Met Pro Leu Phe Leu Phe Val Ala His Leu Ile Ser Leu Leu Leu Ala
 1 5 10 15
 Phe Arg Arg Pro Pro Ala Ser Gln Ile Thr Pro Arg Ala Trp Thr Thr
 20 25 30
 Glu Ile Ala Ser Cys Glu Ser Val Glu Met Val Lys Ala Leu Ser Ser
 35 40 45
 Leu Arg Ser Arg Ala Gln Val Asn Ala Asp Phe Pro Gly His Leu Cys
 50 55 60

<210> 311
 <211> 49
 <212> PRT
 <213> Homo sapiens

<400> 311
 Met Asn Leu Leu Gly Met Ile Phe Ser Met Cys Gly Leu Met Leu Lys
 1 5 10 15
 Leu Lys Trp Cys Ala Trp Val Ala Val Tyr Cys Ser Phe Ile Ser Phe
 20 25 30
 Ala Asn Ser Arg Ser Ser Glu Asp Thr Lys Gln Met Met Ser Ser Phe
 35 40 45
 Met

<210> 312
 <211> 59
 <212> PRT
 <213> Homo sapiens

<400> 312
 Met Asn Ser Thr Leu Cys Val Val Leu Ser Leu Met Cys Met Asn Ser
 1 5 10 15
 Thr Leu Cys Val Val Leu Ser Leu Thr His Ser Cys Pro Ser Pro Gln
 20 25 30
 Val Pro Lys Val His Tyr Met Ile Phe Met Pro Leu His Leu His Ser
 35 40 45
 Leu Ala Leu Thr Gln Leu Ile Ile Ile Tyr Lys
 50 55

<210> 313
 <211> 240
 <212> PRT
 <213> Homo sapiens

<400> 313
 Met Gly Asn Cys Gln Ala Gly His Asn Leu His Leu Cys Leu Ala His
 1 5 10 15
 His Pro Pro Leu Val Cys Ala Thr Leu Ile Leu Leu Leu Gly Leu
 20 25 30
 Ser Gly Leu Gly Leu Gly Ser Phe Leu Leu Thr His Arg Thr Gly Leu
 35 40 45
 Arg Ser Pro Asp Ile Pro Gln Asp Trp Val Ser Phe Leu Arg Ser Phe
 50 55 60
 Gly Gln Leu Thr Leu Cys Pro Arg Asn Gly Thr Val Thr Gly Lys Trp
 65 70 75 80

Arg Gly Ser His Val Val Gly Leu Leu Thr Thr Leu Asn Phe Gly Asp
 85 90 95
 Gly Pro Asp Arg Asn Lys Thr Arg Thr Phe Gln Ala Thr Val Leu Gly
 100 105 110
 Ser Gln Met Gly Leu Lys Gly Ser Ser Ala Gly Gln Leu Val Leu Ile
 115 120 125
 Thr Ala Arg Val Thr Thr Glu Arg Thr Ala Gly Thr Cys Leu Tyr Phe
 130 135 140
 Ser Ala Val Pro Gly Ile Leu Pro Ser Ser Gln Pro Pro Ile Ser Cys
 145 150 155 160
 Ser Glu Glu Gly Ala Gly Asn Ala Thr Leu Ser Pro Arg Met Gly Glu
 165 170 175
 Glu Cys Val Ser Val Trp Ser His Glu Gly Leu Val Leu Thr Lys Leu
 180 185 190
 Leu Thr Ser Glu Glu Leu Ala Leu Cys Gly Ser Arg Leu Leu Val Leu
 195 200 205
 Gly Ser Phe Leu Leu Leu Phe Cys Gly Leu Leu Cys Cys Val Thr Ala
 210 215 220
 Met Cys Phe His Pro Arg Arg Glu Ser His Trp Ser Arg Thr Arg Leu
 225 230 235 240

<210> 314
 <211> 39
 <212> PRT
 <213> Homo sapiens

<400> 314
 Met Leu Leu Leu Leu Lys Thr Leu Phe Val Thr Phe Trp Ser Thr Asn
 1 5 10 15
 Leu Ser Ile Thr Phe Ser Asn Tyr Asn Val Lys Leu Tyr Gln Trp Gln
 20 25 30
 Ser Tyr Ile Val Asn Gly Ser
 35

<210> 315
 <211> 174
 <212> PRT
 <213> Homo sapiens

<400> 315
 Met Glu Ala Pro Gly Pro Arg Ala Leu Arg Thr Ala Leu Cys Gly Gly
 1 5 10 15

Cys Cys Cys Leu Leu Leu Cys Ala Gln Leu Ala Val Ala Gly Lys Gly
 20 25 30
 Ala Arg Gly Phe Gly Arg Gly Ala Leu Ile Arg Leu Asn Ile Trp Pro
 35 40 45
 Ala Val Gln Gly Ala Cys Lys Gln Leu Glu Val Cys Glu His Cys Val
 50 55 60
 Glu Gly Asp Arg Ala Arg Asn Leu Ser Ser Cys Met Trp Glu Gln Cys
 65 70 75 80
 Arg Pro Glu Glu Pro Gly His Cys Val Ala Gln Ser Glu Val Val Lys
 85 90 95
 Glu Gly Cys Ser Ile Tyr Asn Arg Ser Glu Ala Cys Pro Ala Ala His
 100 105 110
 His His Pro Thr Tyr Glu Pro Lys Thr Val Thr Thr Gly Ser Pro Pro
 115 120 125
 Val Pro Glu Ala His Ser Pro Gly Phe Asp Gly Ala Ser Phe Ile Gly
 130 135 140
 Gly Val Val Leu Val Leu Ser Leu Gln Ala Val Ala Phe Phe Val Leu
 145 150 155 160
 His Phe Leu Lys Ala Lys Asp Ser Thr Tyr Gln Thr Leu Ile
 165 170

<210> 316
 <211> 61
 <212> PRT
 <213> Homo sapiens

<400> 316
 Met Tyr Leu Phe Leu Lys Thr Leu Leu Ser Phe Ser Thr Leu Met Met
 1 5 10 15
 Thr Thr Ala Leu Ser Phe Met Val Ile Thr Val Leu Trp Val Leu Leu
 20 25 30
 Leu His Leu Leu Ala Asn Ile Cys Ile Pro Arg Lys Cys Ser Phe Ala
 35 40 45
 Cys Phe Tyr Ile Asn Gly Ile Leu Leu His Ala Val Phe
 50 55 60

<210> 317
 <211> 319
 <212> PRT
 <213> Homo sapiens

<400> 317
 Met Ser Trp Cys Cys Leu Trp Leu Cys Leu Ser Ser Val Gly Arg Thr
 1 5 10 15

Gly Ser Ala Gly Pro Ser Leu Pro Phe Ser Glu Leu Cys Ser Leu Gly
 20 25 30
 Leu Leu Arg Leu Arg Pro Val Phe Ser Pro Leu His Ser Gly Pro Gly
 35 40 45
 Lys Pro Ala Gln Phe Leu Ala Gly Glu Ala Glu Glu Val Asn Ala Phe
 50 55 60
 Ala Leu Gly Phe Leu Ser Thr Ser Ser Gly Val Ser Gly Glu Asp Glu
 65 70 75 80
 Val Glu Pro Leu His Asp Gly Val Glu Glu Ala Glu Lys Lys Met Glu
 85 90 95
 Glu Glu Gly Val Ser Val Ser Glu Met Glu Ala Thr Gly Ala Gln Gly
 100 105 110
 Pro Ser Arg Val Glu Glu Ala Glu Gly His Thr Glu Val Thr Glu Ala
 115 120 125
 Glu Gly Ser Gln Gly Thr Ala Glu Ala Asp Gly Pro Gly Ala Ser Ser
 130 135 140
 Gly Asp Glu Asp Ala Ser Gly Arg Ala Ala Ser Pro Glu Ser Ala Ser
 145 150 155 160
 Ser Thr Pro Glu Ser Leu Gln Ala Arg Arg His His Gln Phe Leu Glu
 165 170 175
 Pro Ala Pro Ala Pro Gly Ala Ala Val Leu Ser Ser Glu Pro Ala Glu
 180 185 190
 Pro Leu Leu Val Arg His Pro Pro Arg Pro Arg Thr Thr Gly Pro Arg
 195 200 205
 Pro Arg Gln Asp Pro His Lys Ala Gly Leu Ser His Tyr Val Lys Leu
 210 215 220
 Phe Ser Phe Tyr Ala Lys Met Pro Met Glu Arg Lys Ala Leu Glu Met
 225 230 235 240
 Val Glu Lys Cys Leu Asp Lys Tyr Phe Gln His Leu Cys Asp Asp Leu
 245 250 255
 Glu Val Phe Ala Ala His Ala Gly Arg Lys Thr Val Lys Pro Glu Asp
 260 265 270
 Leu Glu Leu Leu Met Arg Arg Gln Gly Leu Val Thr Asp Gln Val Ser
 275 280 285
 Leu His Val Leu Val Glu Arg His Leu Pro Leu Glu Tyr Arg Gln Leu
 290 295 300
 Leu Ile Pro Cys Ala Tyr Ser Gly Asn Ser Val Phe Pro Ala Gln
 305 310 315

<210> 318

<211> 336

<212> PRT

<213> Homo sapiens

<400> 318

```

Met Ile Ser Tyr Ile Val Leu Leu Ser Ile Leu Leu Trp Pro Leu Val
 1           5           10           15

Val Tyr His Glu Leu Ile Gln Arg Met Tyr Thr Arg Leu Glu Pro Leu
          20           25           30

Leu Met Gln Leu Asp Tyr Ser Met Lys Ala Glu Ala Asn Ala Leu His
          35           40           45

His Lys His Asp Lys Arg Lys Arg Gln Gly Lys Asn Ala Pro Pro Gly
          50           55           60

Gly Asp Glu Pro Leu Ala Glu Thr Glu Ser Glu Ser Glu Ala Glu Leu
 65           70           75           80

Ala Gly Phe Ser Pro Val Val Asp Val Lys Lys Thr Ala Leu Ala Leu
          85           90           95

Ala Ile Thr Asp Ser Glu Leu Ser Asp Glu Glu Ala Ser Ile Leu Glu
          100          105          110

Ser Gly Gly Phe Ser Val Ser Arg Ala Thr Thr Pro Gln Leu Thr Asp
          115          120          125

Val Ser Glu Asp Leu Asp Gln Gln Ser Leu Pro Ser Glu Pro Glu Glu
          130          135          140

Thr Leu Ser Arg Asp Leu Gly Glu Gly Glu Glu Gly Glu Leu Ala Pro
          145          150          155          160

Pro Glu Asp Leu Leu Gly Arg Pro Gln Ala Leu Ser Arg Gln Ala Leu
          165          170          175

Asp Ser Glu Glu Glu Glu Glu Asp Val Ala Ala Lys Glu Thr Leu Leu
          180          185          190

Arg Leu Ser Ser Pro Leu His Phe Val Asn Thr His Phe Asn Gly Ala
          195          200          205

Gly Ser Pro Gln Asp Gly Val Lys Cys Ser Pro Gly Gly Pro Val Glu
          210          215          220

Thr Leu Ser Pro Glu Thr Val Ser Gly Gly Leu Thr Ala Leu Pro Gly
          225          230          235          240

Thr Leu Ser Pro Pro Leu Cys Leu Val Gly Ser Asp Pro Ala Pro Ser
          245          250          255

Pro Ser Ile Leu Pro Pro Val Pro Gln Asp Ser Pro Gln Pro Leu Pro
          260          265          270

Ala Pro Glu Glu Glu Glu Ala Leu Thr Thr Glu Asp Phe Glu Leu Leu
          275          280          285

Asp Gln Gly Glu Leu Glu Gln Leu Asn Ala Glu Leu Gly Leu Glu Pro
          290          295          300

```


Glu Thr Pro Pro Lys Pro Pro Asp Ala Pro Pro Leu Gly Pro Asp Ile
 305 310 315 320

His Ser Leu Val Gln Ser Asp Gln Glu Ala Gln Ala Val Ala Glu Pro
 325 330 335

<210> 319

<211> 272

<212> PRT

<213> Homo sapiens

<400> 319

Met Trp Gly Asn Lys Phe Gly Val Leu Leu Phe Leu Tyr Ser Val Leu
 1 5 10 15

Leu Thr Lys Gly Ile Glu Asn Ile Lys Asn Glu Ile Glu Asp Ala Ser
 20 25 30

Glu Pro Leu Ile Asp Pro Val Tyr Gly His Gly Ser Gln Ser Leu Ile
 35 40 45

Asn Leu Leu Leu Thr Gly His Ala Val Ser Asn Val Trp Asp Gly Asp
 50 55 60

Arg Glu Cys Ser Gly Met Lys Leu Leu Gly Ile His Glu Gln Ala Ala
 65 70 75 80

Val Gly Phe Leu Thr Leu Met Glu Ala Leu Arg Tyr Cys Lys Val Gly
 85 90 95

Ser Tyr Leu Lys Ser Pro Lys Phe Pro Ile Trp Ile Val Gly Ser Glu
 100 105 110

Thr His Leu Thr Val Phe Phe Ala Lys Asp Met Ala Leu Val Ala Pro
 115 120 125

Glu Ala Pro Ser Glu Gln Ala Arg Arg Val Phe Gln Thr Tyr Asp Pro
 130 135 140

Glu Asp Asn Gly Phe Ile Pro Asp Ser Leu Leu Glu Asp Val Met Lys
 145 150 155 160

Ala Leu Asp Leu Val Ser Asp Pro Glu Tyr Ile Asn Leu Met Lys Asn
 165 170 175

Lys Leu Asp Pro Glu Gly Leu Gly Ile Ile Leu Leu Gly Pro Phe Leu
 180 185 190

Gln Glu Phe Phe Pro Asp Gln Gly Ser Ser Gly Pro Glu Ser Phe Thr
 195 200 205

Val Tyr His Tyr Asn Gly Leu Lys Gln Ser Asn Tyr Asn Glu Lys Val
 210 215 220

Met Tyr Val Glu Gly Thr Ala Val Val Met Gly Phe Glu Asp Pro Met
 225 230 235 240

Pro Tyr Ile Glu Leu Leu Trp Thr Thr Asp Arg Ser Pro Ser Leu Asn
260 265 270

```
<400> 320
Met Phe Lys Asp Tyr Pro Pro Ala Ile Lys Pro Ser Tyr Asp Val Leu
  1                               5          10          15
```

Gly Ala Ser Trp Asp Thr Gln Asn Gly Pro Gln Glu Arg Leu Ala Gly
50 55 60

Glu Val Ala Arg Ser Pro Leu Lys Glu Phe Asp Lys Glu Lys Ala Trp
65 70 75 80

Arg Ala Val Val Val Gln Met Ala Gln
85

```
<210> 321
<211> 51
<212> PRT
<213> Homo sapiens
```

```
<220>  
<221> SITE  
<222> (23)  
<223> Xaa equals any amino acid
```

<400> 321
Met Ala Gln His His Leu Leu Ser Ile Leu Leu Ala Ile Leu Ser Cys
1 5 10 15

Ser Ser Gln Pro Arg Gln Xaa Arg Gly Ser Gly Ala Leu Pro Cys Glu
20 25 30

Val Cys Ser Ala Val Leu Leu Thr Cys Leu Arg Lys Ile Ser Gly Ser
35 40 45

Leu Cys Val
50

<210> 322
 <211> 74
 <212> PRT
 <213> Homo sapiens

<400> 322
 Met Leu His Leu Ala Ala Met Trp Trp Ala Cys Val Thr Thr Leu Val
 1 5 10 15
 Phe Thr Leu Val Ser Lys Leu Phe Ile Pro Leu Lys Ser Ser Met Asp
 20 25 30
 Gly Glu Met Ser Leu Asp Pro His Ser Cys Val Leu Val Cys Ile Cys
 35 40 45
 Phe Pro Leu Arg Phe Val Phe Val Ser Cys Phe Glu Leu Tyr Leu Val
 50 55 60
 Gln Ser Ile Val Lys Leu Ser Gln Gln Leu
 65 70

<210> 323
 <211> 127
 <212> PRT
 <213> Homo sapiens

<400> 323
 Met Gly Gln Val Trp Arg Val Pro Pro Leu Leu Leu Ser Val Gln Val
 1 5 10 15
 Phe Leu Thr Met Ala His Ala Phe His Gln Ala Pro Glu Leu Gln Trp
 20 25 30
 Leu Gly Leu Trp Phe Trp Val Arg Leu Phe Ala Gly Gly Asp Gly Gly
 35 40 45
 Leu His Leu Asn Ile Ser Ser Val Thr Leu Pro Leu Leu His Gly Lys
 50 55 60
 Gln Leu Ser Arg Glu Val Pro Ser Cys Gln Gly Lys Pro Arg Leu Gly
 65 70 75 80
 Arg Pro Pro Tyr Lys Glu Pro Gln Asp Cys Ser His Gly Cys His Leu
 85 90 95
 Ser Trp Lys Gly Arg Phe Met Gly Phe Pro Gly Thr Pro Arg Leu Ser
 100 105 110
 Trp Pro Arg Gly Lys Arg Trp Leu Leu Gln Glu Phe Asp Leu Ser
 115 120 125

<210> 324
 <211> 215
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (83)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (141)
 <223> Xaa equals any amino acid

<400> 324
 Met Tyr Gly Lys Ser Ser Thr Arg Ala Val Leu Leu Leu Leu Gly Ile
 1 5 10 15
 Gln Leu Thr Ala Leu Trp Pro Ile Ala Val Glu Ile Tyr Thr Ser
 20 25 30
 Arg Val Leu Glu Ala Val Asn Gly Thr Asp Ala Arg Leu Lys Cys Thr
 35 40 45
 Phe Ser Ser Phe Ala Pro Val Gly Asp Ala Leu Thr Val Thr Trp Asn
 50 55 60
 Phe Arg Pro Leu Asp Gly Gly Pro Glu Gln Phe Val Phe Tyr Tyr His
 65 70 75 80
 Ile Asp Xaa Phe Gln Pro Met Ser Gly Arg Phe Lys Asp Arg Val Ser
 85 90 95
 Trp Asp Gly Asn Pro Glu Arg Tyr Asp Ala Ser Ile Leu Leu Trp Lys
 100 105 110
 Leu Gln Phe Asp Asp Asn Gly Thr Tyr Thr Cys Gln Val Lys Asn Pro
 115 120 125
 Pro Asp Val Asp Gly Val Ile Gly Asp Ile Arg Leu Xaa Val Val His
 130 135 140
 Thr Val Arg Phe Ser Glu Ile His Phe Leu Ala Leu Ala Ile Gly Ser
 145 150 155 160
 Ala Cys Ala Leu Met Ile Ile Ile Val Ile Val Val Val Leu Phe Gln
 165 170 175
 His Tyr Arg Lys Lys Arg Trp Ala Glu Arg Ala His Lys Val Val Glu
 180 185 190
 Ile Lys Ser Lys Glu Glu Glu Arg Leu Asn Gln Glu Lys Lys Val Ser
 195 200 205
 Val Tyr Leu Glu Asp Thr Asp
 210 215

<210> 325
 <211> 47
 <212> PRT
 <213> Homo sapiens

<400> 325

Met Phe Tyr Pro Pro Cys Pro Phe Phe Pro Gln Leu Cys Phe Cys Ile
 1 5 10 15
 Phe Phe Leu Gly Lys Cys Lys Leu Ser Leu Ser Phe Met Thr Cys Glu
 20 25 30
 Ile Ser Val Ser Leu Glu Phe Val Arg Arg Arg Gly Asn His Ala
 35 40 45

<210> 326

<211> 100

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (36)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (47)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (51)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (83)

<223> Xaa equals any amino acid

<400> 326

Met Gly Met Ile Leu Val Leu Ala Ser Phe Leu Ala His Pro Val Glu
 1 5 10 15
 Ala Leu Ala Gln Ala Val Ala Leu Gly Gln Gln Gln Leu Ala Leu Leu
 20 25 30
 Gly Val Gln Xaa His Ala Val Glu Gly Phe Leu Gln Leu Gln Xaa Cys
 35 40 45
 Phe Ala Xaa Leu Phe Val Phe Glu Gly Ala Leu Leu Ala His Leu Gly
 50 55 60
 His Phe Phe Val Glu Pro Gly Ala Ala Gln Gly Gln Leu Leu Asp Leu
 65 70 75 80
 Gly Leu Xaa Arg Arg Glu Leu Gly Phe Gln Phe Ala Leu Leu Ala Arg
 85 90 95
 Phe Val Leu Gln
 100

<210> 327
 <211> 40
 <212> PRT
 <213> Homo sapiens

<400> 327
 Met Ile Ile Leu His Ile Val Val Cys Leu Phe Thr Ile Ser Ile Ile
 1 5 10 15
 Glu Glu Gln Lys Glu Glu Ile Leu Cys Ser Thr Lys Ser Gln Ala Glu
 20 25 30
 Lys Thr Val Thr His Ile Glu Gln
 35 40

<210> 328
 <211> 108
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (62)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (63)
 <223> Xaa equals any amino acid

<400> 328
 Met Gly Ala Ala Lys Val Trp Gly Glu Val Gly Arg Trp Leu Val Ile
 1 5 10 15
 Ala Leu Ile Gln Leu Ala Lys Ala Val Leu Arg Met Leu Leu Leu Leu
 20 25 30
 Trp Phe Lys Ala Gly Leu Gln Thr Ser Pro Pro Ile Val Pro Leu Asp
 35 40 45
 Arg Glu Thr Arg His Ser Pro Arg Met Val Thr Thr Ala Xaa Xaa Thr
 50 55 60
 Met Ser Ser Pro Thr Trp Gly Ser Gly Gln Thr Gly Trp Cys Glu Pro
 65 70 75 80
 Ser Arg Thr Arg Arg Pro Cys Thr Pro Gly Thr Gly Glu Leu Pro Ser
 85 90 95
 Ser Gly Arg Asp Gly Ser Ser Ser Ile Thr Arg Ser
 100 105

<210> 329
 <211> 941
 <212> PRT
 <213> Homo sapiens

<400> 329

Met Val Phe Leu Pro Leu Lys Trp Ser Leu Ala Thr Met Ser Phe Leu
 1 5 10 15

 Leu Ser Ser Leu Leu Ala Leu Leu Thr Val Ser Thr Pro Ser Trp Cys
 20 25 30

 Gln Ser Thr Glu Ala Ser Pro Lys Arg Ser Asp Gly Thr Pro Phe Pro
 35 40 45

 Trp Asn Lys Ile Arg Leu Pro Glu Tyr Val Ile Pro Val His Tyr Asp
 50 55 60

 Leu Leu Ile His Ala Asn Leu Thr Thr Leu Thr Phe Trp Gly Thr Thr
 65 70 75 80

 Lys Val Glu Ile Thr Ala Ser Gln Pro Thr Ser Thr Ile Ile Leu His
 85 90 95

 Ser His His Leu Gln Ile Ser Arg Ala Thr Leu Arg Lys Gly Ala Gly
 100 105 110

 Glu Arg Leu Ser Glu Glu Pro Leu Gln Val Leu Glu His Pro Pro Gln
 115 120 125

 Glu Gln Ile Ala Leu Leu Ala Pro Glu Pro Leu Leu Val Gly Leu Pro
 130 135 140

 Tyr Thr Val Val Ile His Tyr Ala Gly Asn Leu Ser Glu Thr Phe His
 145 150 155 160

 Gly Phe Tyr Lys Ser Thr Tyr Arg Thr Lys Glu Gly Glu Leu Arg Ile
 165 170 175

 Leu Ala Ser Thr Gln Phe Glu Pro Thr Ala Ala Arg Met Ala Phe Pro
 180 185 190

 Cys Phe Asp Glu Pro Ala Phe Lys Ala Ser Phe Ser Ile Lys Ile Arg
 195 200 205

 Arg Glu Pro Arg His Leu Ala Ile Ser Asn Met Pro Leu Val Lys Ser
 210 215 220

 Val Thr Val Ala Glu Gly Leu Ile Glu Asp His Phe Asp Val Thr Val
 225 230 235 240

 Lys Met Ser Thr Tyr Leu Val Ala Phe Ile Ile Ser Asp Phe Glu Ser
 245 250 255

 Val Ser Lys Ile Thr Lys Ser Gly Val Lys Val Ser Val Tyr Ala Val
 260 265 270

 Pro Asp Lys Met Asn Gln Ala Asp Tyr Ala Leu Asp Ala Ala Val Thr
 275 280 285

 Leu Leu Glu Phe Tyr Glu Asp Tyr Phe Ser Ile Pro Tyr Pro Leu Pro
 290 295 300

 Lys Gln Asp Leu Ala Ala Ile Pro Asp Phe Gln Ser Gly Ala Met Glu
 305 310 315 320

Asn Trp Gly Leu Thr Thr Tyr Arg Glu Ser Ala Leu Leu Phe Asp Ala
 325 330 335
 Glu Lys Ser Ser Ala Ser Ser Lys Leu Gly Ile Thr Met Thr Val Ala
 340 345 350
 His Glu Leu Ala His Gln Trp Phe Gly Asn Leu Val Thr Met Glu Trp
 355 360 365
 Trp Asn Asp Leu Trp Leu Asn Glu Gly Phe Ala Lys Phe Met Glu Phe
 370 375 380
 Val Ser Val Ser Val Thr His Pro Glu Leu Lys Val Gly Asp Tyr Phe
 385 390 395 400
 Phe Gly Lys Cys Phe Asp Ala Met Glu Val Asp Ala Leu Asn Ser Ser
 405 410 415
 His Pro Val Ser Thr Pro Val Glu Asn Pro Ala Gln Ile Arg Glu Met
 420 425 430
 Phe Asp Asp Val Ser Tyr Asp Lys Gly Ala Cys Ile Leu Asn Met Leu
 435 440 445
 Arg Glu Tyr Leu Ser Ala Asp Ala Phe Lys Ser Gly Ile Val Gln Tyr
 450 455 460
 Leu Gln Lys His Ser Tyr Lys Asn Thr Lys Asn Glu Asp Leu Trp Asp
 465 470 475 480
 Ser Met Ala Ser Ile Cys Pro Thr Asp Gly Val Lys Gly Met Asp Gly
 485 490 495
 Phe Cys Ser Arg Ser Gln His Ser Ser Ser Ser Ser His Trp His Gln
 500 505 510
 Glu Gly Val Asp Val Lys Thr Met Met Asn Thr Trp Thr Leu Gln Arg
 515 520 525
 Gly Phe Pro Leu Ile Thr Ile Thr Val Arg Gly Arg Asn Val His Met
 530 535 540
 Lys Gln Glu His Tyr Met Lys Gly Ser Asp Gly Ala Pro Asp Thr Gly
 545 550 555 560
 Tyr Leu Trp His Val Pro Leu Thr Phe Ile Thr Ser Lys Ser Asp Met
 565 570 575
 Val His Arg Phe Leu Leu Lys Thr Lys Thr Asp Val Leu Ile Leu Pro
 580 585 590
 Glu Glu Val Glu Trp Ile Lys Phe Asn Val Gly Met Asn Gly Tyr Tyr
 595 600 605
 Ile Val His Tyr Glu Asp Asp Gly Trp Asp Ser Leu Thr Gly Leu Leu
 610 615 620
 Lys Gly Thr His Thr Ala Val Ser Ser Asn Asp Arg Ala Ser Leu Ile
 625 630 635 640

Asn Asn Ala Phe Gln Leu Val Ser Ile Gly Lys Leu Ser Ile Glu Lys
 645 650 655
 Ala Leu Asp Leu Ser Leu Tyr Leu Lys His Glu Thr Glu Ile Met Pro
 660 665 670
 Val Phe Gln Gly Leu Asn Glu Leu Ile Pro Met Tyr Lys Leu Met Glu
 675 680 685
 Lys Arg Asp Met Asn Glu Val Glu Thr Gln Phe Lys Ala Phe Leu Ile
 690 695 700
 Arg Leu Leu Arg Asp Leu Ile Asp Lys Gln Thr Trp Thr Asp Glu Gly
 705 710 715 720
 Ser Val Ser Glu Arg Met Leu Arg Ser Glu Leu Leu Leu Leu Ala Cys
 725 730 735
 Val His Asn Tyr Gln Pro Cys Val Gln Arg Ala Glu Gly Tyr Phe Arg
 740 745 750
 Lys Trp Lys Glu Ser Asn Gly Asn Leu Ser Leu Pro Val Asp Val Thr
 755 760 765
 Leu Ala Val Phe Ala Val Gly Ala Gln Ser Thr Glu Gly Trp Asp Phe
 770 775 780
 Leu Tyr Ser Lys Tyr Gln Phe Ser Leu Ser Ser Thr Glu Lys Ser Gln
 785 790 795 800
 Ile Glu Phe Ala Leu Cys Arg Thr Gln Asn Lys Glu Lys Leu Gln Trp
 805 810 815
 Leu Leu Asp Glu Ser Phe Lys Gly Asp Lys Ile Lys Thr Gln Glu Phe
 820 825 830
 Pro Gln Ile Leu Thr Leu Ile Gly Arg Asn Pro Val Gly Tyr Pro Leu
 835 840 845
 Ala Trp Gln Phe Leu Arg Lys Asn Trp Asn Lys Leu Val Gln Lys Phe
 850 855 860
 Glu Leu Gly Ser Ser Ser Ile Ala His Met Val Met Gly Thr Thr Asn
 865 870 875 880
 Gln Phe Ser Thr Arg Thr Arg Leu Glu Glu Val Lys Gly Phe Phe Ser
 885 890 895
 Ser Leu Lys Glu Asn Gly Ser Gln Leu Arg Cys Val Gln Gln Thr Ile
 900 905 910
 Glu Thr Ile Glu Glu Asn Ile Gly Trp Met Asp Lys Asn Phe Asp Lys
 915 920 925
 Ile Arg Val Trp Leu Gln Ser Glu Lys Leu Glu Arg Met
 930 935 940

<210> 330

<211> 267

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (172)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (175)

<223> Xaa equals any amino acid

<400> 330

Met Ser Glu Ile Arg Gly Lys Pro Ile Glu Ser Ser Cys Met Tyr Gly
 1 5 10 15

Thr Cys Cys Leu Trp Gly Lys Thr Tyr Ser Ile Gly Phe Leu Arg Phe
 20 25 30

Cys Lys Gln Ala Thr Leu Gln Phe Cys Val Val Lys Pro Leu Met Ala
 35 40 45

Val Ser Thr Val Val Leu Gln Ala Phe Gly Lys Tyr Arg Asp Gly Asp
 50 55 60

Phe Asp Val Thr Ser Gly Tyr Leu Tyr Val Thr Ile Ile Tyr Asn Ile
 65 70 75 80

Ser Val Ser Leu Ala Leu Tyr Ala Leu Phe Leu Phe Tyr Phe Ala Thr
 85 90 95

Arg Glu Leu Leu Ser Pro Tyr Ser Pro Val Leu Lys Phe Phe Met Val
 100 105 110

Lys Ser Val Ile Phe Leu Ser Phe Trp Gln Gly Met Leu Leu Ala Ile
 115 120 125

Leu Glu Lys Cys Gly Ala Ile Pro Lys Ile His Ser Ala Arg Val Ser
 130 135 140

Val Gly Glu Gly Thr Val Ala Ala Gly Tyr Gln Asp Phe Ile Ile Cys
 145 150 155 160

Val Glu Met Phe Phe Ala Ala Leu Ala Leu Arg Xaa Ala Phe Xaa Tyr
 165 170 175

Lys Val Tyr Ala Asp Lys Arg Leu Asp Ala Gln Gly Arg Cys Ala Pro
 180 185 190

Met Lys Ser Ile Ser Ser Ser Leu Lys Glu Thr Met Asn Pro His Asp
 195 200 205

Ile Val Gln Asp Ala Ile His Asn Phe Ser Pro Ala Tyr Gln Gln Tyr
 210 215 220

Thr Gln Gln Ser Thr Leu Glu Pro Gly Pro Thr Trp Arg Gly Gly Ala
 225 230 235 240

His Gly Leu Ser Arg Ser His Ser Leu Ser Gly Ala Arg Asp Asn Glu
 245 250 255

Lys Thr Leu Leu Leu Ser Ser Asp Asp Glu Phe
 260 265

<210> 331
 <211> 53
 <212> PRT
 <213> Homo sapiens

<400> 331
 Met Leu Val Leu Met Thr Thr Cys Ile Leu Ala Ala Val Cys Val His
 1 5 10 15
 Thr Ala Gln Cys Ala Pro Asp Ser Arg Met Asp Asn Asp Cys Pro Ser
 20 25 30
 His Gln Ala Gln Ile His Phe Arg Ala Ser Glu Val Arg Arg Gly Trp
 35 40 45
 Thr Phe Asn His Asp
 50

<210> 332
 <211> 52
 <212> PRT
 <213> Homo sapiens

<400> 332
 Met His Cys His Ser Ala Leu Gly Pro Met Ser Thr Pro Val Leu Pro
 1 5 10 15
 Phe Ser Gly Ile Gly Leu Ala Phe Leu Cys Leu Cys Leu Ala Ala Ser
 20 25 30
 Met Val Asp Leu Lys Cys Leu Gly Met Asn Ser Thr Leu Leu Gln Pro
 35 40 45
 Ser Ile Lys Glu
 50

<210> 333
 <211> 87
 <212> PRT
 <213> Homo sapiens

<400> 333
 Met Gly Leu His Leu Arg Pro Tyr Arg Val Gly Leu Leu Pro Asp Gly
 1 5 10 15
 Leu Leu Phe Leu Leu Leu Leu Met Leu Leu Ala Asp Pro Ala Leu
 20 25 30
 Pro Ala Gly Arg His Pro Pro Val Val Leu Val Pro Gly Asp Leu Gly
 35 40 45

Asn Gln Leu Glu Ala Lys Leu Asp Lys Pro Thr Val Val His Tyr Leu
 50 55 60

Cys Ser Lys Lys Thr Glu Ser Tyr Phe Thr Ile Trp Leu Asn Leu Glu
 65 70 75 80

Leu Leu Leu Pro Val His His
 85

<210> 334

<211> 40

<212> PRT

<213> Homo sapiens

<400> 334

Met Gly Pro Ser Gln Arg Glu Val Thr Val Gln Trp His Arg Ala Leu
 1 5 10 15

Phe Leu Leu Pro Leu Leu Leu Leu Ser Thr Arg Thr Glu Thr Lys Asn
 20 25 30

Phe Gly Phe Lys Trp Leu Lys Asp
 35 40

<210> 335

<211> 525

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (210)

<223> Xaa equals any amino acid

<400> 335

Met Leu Ala Phe Pro Leu Leu Leu Thr Gly Leu Ile Ser Phe Arg Glu
 1 5 10 15

Lys Arg Leu Gln Asp Val Gly Thr Pro Ala Ala Arg Ala Arg Ala Phe
 20 25 30

Phe Thr Ala Pro Val Val Val Phe His Leu Asn Ile Leu Ser Tyr Phe
 35 40 45

Ala Phe Leu Cys Leu Phe Ala Tyr Val Leu Met Val Asp Phe Gln Pro
 50 55 60

Val Pro Ser Trp Cys Glu Cys Ala Ile Tyr Leu Trp Leu Phe Ser Leu
 65 70 75 80

Val Cys Glu Glu Met Arg Gln Leu Phe Tyr Asp Pro Asp Glu Cys Gly
 85 90 95

Leu Met Lys Lys Ala Ala Leu Tyr Phe Ser Asp Phe Trp Asn Lys Leu
 100 105 110

Asp Val Gly Ala Ile Leu Leu Phe Val Ala Gly Leu Thr Cys Arg Leu

115	120	125
Ile Pro Ala Thr Leu Tyr	Pro Gly Arg Val	Ile Leu Ser Leu Asp Phe
130	135	140
Ile Leu Phe Cys Leu Arg	Leu Met His Ile	Phe Thr Ile Ser Lys Thr
145	150	155
Leu Gly Pro Lys Ile Ile Ile Val	Lys Arg Met Met Lys Asp Val Phe	
165	170	175
Phe Phe Leu Phe Leu Leu Ala Val	Trp Val Val Ser Phe Gly Val Ala	
180	185	190
Lys Gln Ala Ile Leu Ile His Asn Glu Arg Arg Val	Asp Trp Leu Phe	
195	200	205
Arg Xaa Ala Val Tyr His Ser Tyr Leu Thr Ile	Phe Gly Gln Ile Pro	
210	215	220
Gly Tyr Ile Asp Gly Val Asn Phe Asn Pro Glu His Cys Ser Pro Asn		
225	230	235
Gly Thr Asp Pro Tyr Lys Pro Lys Cys Pro Glu Ser Asp Ala Thr Gln		
245	250	255
Gln Arg Pro Ala Phe Pro Glu Trp Leu Thr Val Leu Leu Leu Cys Leu		
260	265	270
Tyr Leu Leu Phe Thr Asn Ile Leu Leu Leu Asn Leu Leu Ile Ala Met		
275	280	285
Phe Asn Tyr Thr Phe Gln Gln Val Gln Glu His Thr Asp Gln Ile Trp		
290	295	300
Lys Phe Gln Arg His Asp Leu Ile Glu Glu Tyr His Gly Arg Pro Ala		
305	310	315
Ala Pro Pro Pro Phe Ile Leu Leu Ser His Leu Gln Leu Phe Ile Lys		
325	330	335
Arg Val Val Leu Lys Thr Pro Ala Lys Arg His Lys Gln Leu Lys Asn		
340	345	350
Lys Leu Glu Lys Asn Glu Glu Ala Ala Leu Leu Ser Trp Glu Ile Tyr		
355	360	365
Leu Lys Glu Asn Tyr Leu Gln Asn Arg Gln Phe Gln Gln Lys Gln Arg		
370	375	380
Pro Glu Gln Lys Ile Glu Asp Ile Ser Asn Lys Val Asp Ala Met Val		
385	390	395
Asp Leu Leu Asp Leu Asp Pro Leu Lys Arg Ser Gly Ser Met Glu Gln		
405	410	415
Arg Leu Ala Ser Leu Glu Glu Gln Val Ala Gln Thr Ala Arg Ala Leu		
420	425	430
His Trp Ile Val Arg Thr Leu Arg Ala Ser Gly Phe Ser Ser Glu Ala		
435	440	445

Asp Val Pro Thr Leu Ala Ser Gln Lys Ala Ala Glu Glu Pro Asp Ala
450 455 460

Glu Pro Gly Gly Arg Lys Lys Thr Glu Glu Pro Gly Asp Ser Tyr His
465 470 475 480

Val Asn Ala Arg His Leu Leu Tyr Pro Asn Cys Pro Val Thr Arg Phe
485 490 495

Pro Val Pro Asn Glu Lys Val Pro Trp Glu Thr Glu Phe Leu Ile Tyr
500 505 510

Asp Pro Pro Phe Tyr Thr Ala Glu Arg Lys Asp Ala Ala
515 520 525

<210> 336

<211> 937

<212> PRT

<213> Homo sapiens

<400> 336

Met Gln Asn Ser Gly Lys Thr Lys Phe Lys Arg Thr Ser Ile Asp Arg
1 5 10 15

Leu Met Asn Thr Leu Val Leu Trp Ile Phe Gly Phe Leu Ile Cys Leu
20 25 30

Gly Ile Ile Leu Ala Ile Gly Asn Ser Ile Trp Glu Ser Gln Thr Gly
35 40 45

Asp Gln Phe Arg Thr Phe Leu Phe Trp Asn Glu Gly Glu Lys Ser Ser
50 55 60

Val Phe Ser Gly Phe Leu Thr Phe Trp Ser Tyr Ile Ile Ile Leu Asn
65 70 75 80

Thr Val Val Pro Ile Ser Leu Tyr Val Ser Val Glu Val Ile Arg Leu
85 90 95

Gly His Ser Tyr Phe Ile Asn Trp Asp Arg Lys Met Tyr Tyr Ser Arg
100 105 110

Lys Ala Ile Pro Ala Val Ala Arg Thr Thr Thr Leu Asn Glu Glu Leu
115 120 125

Gly Gln Ile Glu Tyr Ile Phe Ser Asp Lys Thr Gly Thr Leu Thr Gln
130 135 140

Asn Ile Met Thr Phe Lys Arg Cys Ser Ile Asn Gly Arg Ile Tyr Gly
145 150 155 160

Glu Val His Asp Asp Leu Asp Gln Lys Thr Glu Ile Thr Gln Glu Lys
165 170 175

Glu Pro Val Asp Phe Ser Val Lys Ser Gln Ala Asp Arg Glu Phe Gln
180 185 190

Phe Phe Asp His Asn Leu Met Glu Ser Ile Lys Met Gly Asp Pro Lys

195					200					205					
Val	His	Glu	Phe	Leu	Arg	Leu	Leu	Ala	Leu	Cys	His	Thr	Val	Met	Ser
210						215					220				
Glu	Glu	Asn	Ser	Ala	Gly	Glu	Leu	Ile	Tyr	Gln	Val	Gln	Ser	Pro	Asp
225					230					235					240
Glu	Gly	Ala	Leu	Val	Thr	Ala	Ala	Arg	Asn	Phe	Gly	Phe	Ile	Phe	Lys
				245					250					255	
Ser	Arg	Thr	Pro	Glu	Thr	Ile	Thr	Ile	Glu	Glu	Leu	Gly	Thr	Leu	Val
			260					265					270		
Thr	Tyr	Gln	Leu	Leu	Ala	Phe	Leu	Asp	Phe	Asn	Asn	Thr	Arg	Lys	Arg
		275					280					285			
Met	Ser	Val	Ile	Val	Arg	Asn	Pro	Glu	Gly	Gln	Ile	Lys	Leu	Tyr	Ser
	290					295					300				
Lys	Gly	Ala	Asp	Thr	Ile	Leu	Phe	Glu	Lys	Leu	His	Pro	Ser	Asn	Glu
305					310					315					320
Val	Leu	Leu	Ser	Leu	Thr	Ser	Asp	His	Leu	Ser	Glu	Phe	Ala	Gly	Glu
				325				330						335	
Gly	Leu	Arg	Thr	Leu	Ala	Ile	Ala	Tyr	Arg	Asp	Leu	Asp	Asp	Lys	Tyr
			340					345					350		
Phe	Lys	Glu	Trp	His	Lys	Met	Leu	Glu	Asp	Ala	Asn	Val	Ala	Thr	Glu
		355					360					365			
Glu	Arg	Asp	Glu	Arg	Ile	Ala	Gly	Leu	Tyr	Glu	Glu	Ile	Glu	Arg	Asp
	370					375					380				
Leu	Met	Leu	Leu	Gly	Ala	Thr	Ala	Val	Glu	Asp	Lys	Leu	Gln	Glu	Gly
385					390					395					400
Val	Ile	Glu	Thr	Val	Thr	Ser	Leu	Ser	Leu	Ala	Asn	Ile	Lys	Ile	Trp
				405					410					415	
Val	Leu	Thr	Gly	Asp	Lys	Gln	Glu	Thr	Ala	Ile	Asn	Ile	Gly	Tyr	Ala
			420					425					430		
Cys	Asn	Met	Leu	Thr	Asp	Asp	Met	Asn	Asp	Val	Phe	Val	Ile	Ala	Gly
		435					440					445			
Asn	Asn	Ala	Val	Glu	Val	Arg	Glu	Glu	Leu	Arg	Lys	Ala	Lys	Gln	Asn
		450				455					460				
Leu	Phe	Gly	Gln	Asn	Arg	Asn	Phe	Ser	Asn	Gly	His	Val	Val	Cys	Glu
465					470					475					480
Lys	Lys	Gln	Gln	Leu	Glu	Leu	Asp	Ser	Ile	Val	Glu	Glu	Thr	Ile	Thr
				485					490					495	
Gly	Asp	Tyr	Ala	Leu	Ile	Ile	Asn	Gly	His	Ser	Leu	Ala	His	Ala	Leu
			500					505					510		
Glu	Ser	Asp	Val	Lys	Asn	Asp	Leu	Leu	Glu	Leu	Ala	Cys	Met	Cys	Lys
		515					520					525			

Thr Val Ile Cys Cys Arg Val Thr Pro Leu Gln Lys Ala Gln Val Val
 530 535 540
 Glu Leu Val Lys Lys Tyr Arg Asn Ala Val Thr Leu Ala Ile Gly Asp
 545 550 555 560
 Gly Ala Asn Asp Val Ser Met Ile Lys Ser Ala His Ile Gly Val Gly
 565 570 575
 Ile Ser Gly Gln Glu Gly Leu Gln Ala Val Leu Ala Ser Asp Tyr Ser
 580 585 590
 Phe Ala Gln Phe Arg Tyr Leu Gln Arg Leu Leu Leu Val His Gly Arg
 595 600 605
 Trp Ser Tyr Phe Arg Met Cys Lys Phe Leu Cys Tyr Phe Phe Tyr Lys
 610 615 620
 Asn Phe Ala Phe Thr Leu Val His Phe Trp Phe Gly Phe Phe Cys Gly
 625 630 635 640
 Phe Ser Ala Gln Thr Val Tyr Asp Gln Trp Phe Ile Thr Leu Phe Asn
 645 650 655
 Ile Val Tyr Thr Ser Leu Pro Val Leu Ala Met Gly Ile Phe Asp Gln
 660 665 670
 Asp Val Ser Asp Gln Asn Ser Val Asp Cys Pro Gln Leu Tyr Lys Pro
 675 680 685
 Gly Gln Leu Asn Leu Leu Phe Asn Lys Arg Lys Phe Phe Ile Cys Val
 690 695 700
 Met His Gly Ile Tyr Thr Ser Leu Val Leu Phe Phe Ile Pro Tyr Gly
 705 710 715 720
 Ala Phe Tyr Asn Val Ala Gly Glu Asp Gly Gln His Ile Ala Asp Tyr
 725 730 735
 Gln Ser Phe Ala Val Thr Met Ala Thr Ser Leu Val Ile Val Val Ser
 740 745 750
 Val Gln Ile Ala Leu Asp Thr Ser Tyr Trp Thr Phe Ile Asn His Val
 755 760 765
 Phe Ile Trp Gly Ser Ile Ala Ile Tyr Phe Ser Ile Leu Phe Thr Met
 770 775 780
 His Ser Asn Gly Ile Phe Gly Ile Phe Pro Asn Gln Phe Pro Phe Val
 785 790 795 800
 Gly Asn Ala Arg His Ser Leu Thr Gln Lys Cys Ile Trp Leu Val Ile
 805 810 815
 Leu Leu Thr Thr Val Ala Ser Val Met Pro Val Val Ala Phe Arg Phe
 820 825 830
 Leu Lys Val Asp Leu Tyr Pro Thr Leu Ser Asp Gln Ile Arg Arg Trp
 835 840 845

Gln Lys Ala Gln Lys Lys Ala Arg Pro Pro Ser Ser Arg Arg Pro Arg
 850 855 860
 Thr Arg Arg Ser Ser Ser Arg Arg Ser Gly Tyr Ala Phe Ala His Gln
 865 870 875 880
 Glu Gly Tyr Gly Glu Leu Ile Thr Ser Gly Lys Asn Met Arg Ala Lys
 885 890 895
 Asn Pro Pro Pro Thr Ser Gly Leu Glu Lys Thr His Tyr Asn Ser Thr
 900 905 910
 Ser Trp Ile Glu Asn Leu Cys Lys Lys Thr Thr Asp Thr Val Ser Ser
 915 920 925
 Phe Ser Gln Asp Lys Thr Val Lys Leu
 930 935

<210> 337
 <211> 122
 <212> PRT
 <213> Homo sapiens

<400> 337
 Met Ile Gly Gly Ile Thr Cys Ile Leu Ser Leu Ile Cys Ala Leu Ala
 1 5 10 15
 Leu Ala Tyr Leu Asp Gln Arg Ala Glu Arg Ile Leu His Lys Glu Gln
 20 25 30
 Gly Lys Thr Gly Glu Val Ile Lys Leu Thr Asp Val Lys Asp Phe Ser
 35 40 45
 Leu Pro Leu Trp Leu Ile Phe Ile Ile Cys Val Cys Tyr Tyr Val Ala
 50 55 60
 Val Phe Pro Phe Ile Gly Leu Gly Lys Val Phe Phe Thr Glu Lys Phe
 65 70 75 80
 Gly Phe Ser Ser Gln Ala Ala Ser Ala Ile Asn Ser Val Val Tyr Val
 85 90 95
 Ile Ser Ala Pro Met Ser Pro Val Phe Gly Leu Leu Val Asp Lys Thr
 100 105 110
 Gly Lys Asn Ile Ile Trp Val Leu Cys Ala
 115 120

<210> 338
 <211> 46
 <212> PRT
 <213> Homo sapiens

<400> 338
 Met Pro Trp Leu Lys Ser Leu Leu His Phe Ser Leu Phe Leu Val Val
 1 5 10 15

Phe Ser Thr Leu Ala Val Lys Ser Leu Gly Val Pro Val Ala Ala Gly
 20 25 30

Ser Pro Phe Cys Ile Val Asp Val Leu His Phe Ile Leu Leu
 35 40 45

<210> 339

<211> 66

<212> PRT

<213> Homo sapiens

<400> 339

Met Ser Trp Val Ile Val Val Ile Ile Trp Gly Tyr Leu Leu Glu Gly
 1 5 10 15

His Gly Val Pro Phe Cys Lys Ser Tyr Gly Pro Ser Pro Trp Lys Leu
 20 25 30

His Thr His His Ala Ala Tyr Asn Ser Gly Ser Ser Gln Val Tyr Arg
 35 40 45

Ile Leu Glu Thr Leu Met Ser Gly Ser Thr His Cys Ser Phe Ser Gly
 50 55 60

Thr Phe
 65

<210> 340

<211> 90

<212> PRT

<213> Homo sapiens

<400> 340

Met Pro Arg Ala Pro Trp Arg Ile Pro Leu Cys Ala Leu Pro Thr Leu
 1 5 10 15

Cys Leu Gly Ser Pro Leu Pro Ser Gln Pro Thr His Pro Ile Phe Tyr
 20 25 30

Asp His Arg Ala Pro Thr Trp Lys Met Ala His Pro Gly Gly Pro Arg
 35 40 45

Ser Ser His Ser Pro Arg Thr Trp Arg Thr Pro Ser Ser Gln Thr Lys
 50 55 60

Ala Ala Leu Pro Ala Gly Gly Ala Arg Asn Ser Pro Leu Gln Leu Cys
 65 70 75 80

Thr Arg Ser Arg Phe Cys Gly Thr Pro Met
 85 90

<210> 341

<211> 710

<212> PRT

<213> Homo sapiens

<400> 341

```

Met Pro Val Pro Trp Phe Leu Leu Ser Leu Ala Leu Gly Arg Ser Pro
 1           5           10           15

Val Val Leu Ser Leu Glu Arg Leu Val Gly Pro Gln Asp Ala Thr His
          20           25           30

Cys Ser Pro Gly Leu Ser Cys Arg Leu Trp Asp Ser Asp Ile Leu Cys
          35           40           45

Leu Pro Gly Asp Ile Val Pro Ala Pro Gly Pro Val Leu Ala Pro Thr
          50           55           60

His Leu Gln Thr Glu Leu Val Leu Arg Cys Gln Lys Glu Thr Asp Cys
          65           70           75           80

Asp Leu Cys Leu Arg Val Ala Val His Leu Ala Val His Gly His Trp
          85           90           95

Glu Glu Pro Glu Asp Glu Glu Lys Phe Gly Gly Ala Ala Asp Leu Gly
          100           105           110

Val Glu Glu Pro Arg Asn Ala Ser Leu Gln Ala Gln Val Val Leu Ser
          115           120           125

Phe Gln Ala Tyr Pro Thr Ala Arg Cys Val Leu Leu Glu Val Gln Val
          130           135           140

Pro Ala Ala Leu Val Gln Phe Gly Gln Ser Val Gly Ser Val Val Tyr
          145           150           155           160

Asp Cys Phe Glu Ala Ala Leu Gly Ser Glu Val Arg Ile Trp Ser Tyr
          165           170           175

Thr Gln Pro Arg Tyr Glu Lys Glu Leu Asn His Thr Gln Gln Leu Pro
          180           185           190

Asp Cys Arg Gly Leu Glu Val Trp Asn Ser Ile Pro Ser Cys Trp Ala
          195           200           205

Leu Pro Trp Leu Asn Val Ser Ala Asp Gly Asp Asn Val His Phe Gly
          210           215           220

Leu Ser Leu Tyr Trp Asn Gln Val Gln Gly Pro Pro Lys Pro Arg Trp
          225           230           235           240

His Lys Asn Leu Thr Gly Pro Gln Ile Ile Thr Leu Asn His Thr Asp
          245           250           255

Leu Val Pro Cys Leu Cys Ile Gln Val Trp Pro Leu Glu Pro Asp Ser
          260           265           270

Val Arg Thr Asn Ile Cys Pro Phe Arg Glu Asp Pro Arg Ala His Gln
          275           280           285

Asn Leu Trp Gln Ala Ala Arg Leu Arg Leu Leu Thr Leu Gln Ser Trp
          290           295           300

Leu Leu Asp Ala Pro Cys Ser Leu Pro Ala Glu Ala Ala Leu Cys Trp
          305           310           315           320

```

Arg Ala Pro Gly Gly Asp Pro Cys Gln Pro Leu Val Pro Pro Leu Ser
 325 330 335
 Trp Glu Asn Val Thr Val Asp Lys Val Leu Glu Phe Pro Leu Leu Lys
 340 345 350
 Gly His Pro Asn Leu Cys Val Gln Val Asn Ser Ser Glu Lys Leu Gln
 355 360 365
 Leu Gln Glu Cys Leu Trp Ala Asp Ser Leu Gly Pro Leu Lys Asp Asp
 370 375 380
 Val Leu Leu Leu Glu Thr Arg Gly Pro Gln Asp Asn Arg Ser Leu Cys
 385 390 395 400
 Ala Leu Glu Pro Ser Gly Cys Thr Ser Leu Pro Ser Lys Ala Ser Thr
 405 410 415
 Arg Ala Ala Arg Leu Gly Glu Tyr Leu Leu Gln Asp Leu Gln Ser Gly
 420 425 430
 Gln Cys Leu Gln Leu Trp Asp Asp Asp Leu Gly Ala Leu Trp Ala Cys
 435 440 445
 Pro Met Asp Lys Tyr Ile His Lys Arg Trp Ala Leu Val Trp Leu Ala
 450 455 460
 Cys Leu Leu Phe Ala Ala Ala Leu Ser Leu Ile Leu Leu Leu Lys Lys
 465 470 475 480
 Asp His Ala Lys Gly Trp Leu Arg Leu Leu Lys Gln Asp Val Arg Ser
 485 490 495
 Gly Ala Ala Ala Arg Gly Arg Ala Ala Leu Leu Leu Tyr Ser Ala Asp
 500 505 510
 Asp Ser Gly Phe Glu Arg Leu Val Gly Ala Leu Ala Ser Ala Leu Cys
 515 520 525
 Gln Leu Pro Leu Arg Val Ala Val Asp Leu Trp Ser Arg Arg Glu Leu
 530 535 540
 Ser Ala Gln Gly Pro Val Ala Trp Phe His Ala Gln Arg Arg Gln Thr
 545 550 555 560
 Leu Gln Glu Gly Gly Val Val Val Leu Leu Phe Ser Pro Gly Ala Val
 565 570 575
 Ala Leu Cys Ser Glu Trp Leu Gln Asp Gly Val Ser Gly Pro Gly Ala
 580 585 590
 His Gly Pro His Asp Ala Phe Arg Ala Ser Leu Ser Cys Val Leu Pro
 595 600 605
 Asp Phe Leu Gln Gly Arg Ala Pro Gly Ser Tyr Val Gly Ala Cys Phe
 610 615 620
 Asp Arg Leu Leu His Pro Asp Ala Val Pro Ala Leu Phe Arg Thr Val
 625 630 635 640

Pro Val Phe Thr Leu Pro Ser Gln Leu Pro Asp Phe Leu Gly Ala Leu
645 650 655

Gln Gln Pro Arg Ala Pro Arg Ser Gly Arg Leu Gln Glu Arg Ala Glu
660 665 670

Gln Val Ser Arg Ala Leu Gln Pro Ala Leu Asp Ser Tyr Phe His Pro
675 680 685

Pro Gly Thr Pro Ala Pro Gly Arg Gly Val Gly Pro Gly Ala Gly Pro
690 695 700

Gly Ala Gly Asp Gly Thr
705 710

<210> 342
<211> 48
<212> PRT
<213> Homo sapiens

<400> 342
Met Phe Ala Pro Cys Phe Val Asn Leu Ala Leu Phe Tyr Leu Tyr Ile
1 5 10 15

Asn Ser Cys Asn Leu Leu Asn Leu Thr Ser Ile Asp Pro Phe Gln Gln
20 25 30

Lys Gly Lys Phe Lys Met Gln Thr Leu Leu Phe Ala Lys Glu Asp Ser
35 40 45

<210> 343
<211> 467
<212> PRT
<213> Homo sapiens

<400> 343
Met Leu Leu Leu Leu Leu Pro Leu Leu Trp Gly Arg Glu Arg Val
1 5 10 15

Glu Gly Gln Lys Ser Asn Arg Lys Asp Tyr Ser Leu Thr Met Gln Ser
20 25 30

Ser Val Thr Val Gln Glu Gly Met Cys Val His Val Arg Cys Ser Phe
35 40 45

Ser Tyr Pro Val Asp Ser Gln Thr Asp Ser Asp Pro Val His Gly Tyr
50 55 60

Trp Phe Arg Ala Gly Asn Asp Ile Ser Trp Lys Ala Pro Val Ala Thr
65 70 75 80

Asn Asn Pro Ala Trp Ala Val Gln Glu Glu Thr Arg Asp Arg Phe His
85 90 95

Leu Leu Gly Asp Pro Gln Thr Lys Asn Cys Thr Leu Ser Ile Arg Asp
 100 105 110
 Ala Arg Met Ser Asp Ala Gly Arg Tyr Phe Phe Arg Met Glu Lys Gly
 115 120 125
 Asn Ile Lys Trp Asn Tyr Lys Tyr Asp Gln Leu Ser Val Asn Val Thr
 130 135 140
 Ala Leu Thr His Arg Pro Asn Ile Leu Ile Pro Gly Thr Leu Glu Ser
 145 150 155 160
 Gly Cys Phe Gln Asn Leu Thr Cys Ser Val Pro Trp Ala Cys Glu Gln
 165 170 175
 Gly Thr Pro Pro Met Ile Ser Trp Met Gly Thr Ser Val Ser Pro Leu
 180 185 190
 His Pro Ser Thr Thr Arg Ser Ser Val Leu Thr Leu Ile Pro Gln Pro
 195 200 205
 Gln His His Gly Thr Ser Leu Thr Cys Gln Val Thr Leu Pro Gly Ala
 210 215 220
 Gly Val Thr Thr Asn Arg Thr Ile Gln Leu Asn Val Ser Tyr Pro Pro
 225 230 235 240
 Gln Asn Leu Thr Val Thr Val Phe Gln Gly Glu Gly Thr Ala Ser Thr
 245 250 255
 Ala Leu Gly Asn Ser Ser Ser Leu Ser Val Leu Glu Gly Gln Ser Leu
 260 265 270
 Arg Leu Val Cys Ala Val Asp Ser Asn Pro Pro Ala Arg Leu Ser Trp
 275 280 285
 Thr Trp Arg Ser Leu Thr Leu Tyr Pro Ser Gln Pro Ser Asn Pro Leu
 290 295 300
 Val Leu Glu Leu Gln Val His Leu Gly Asp Glu Gly Glu Phe Thr Cys
 305 310 315 320
 Arg Ala Gln Asn Ser Leu Gly Ser Gln His Val Ser Leu Asn Leu Ser
 325 330 335
 Leu Gln Gln Glu Tyr Thr Gly Lys Met Arg Pro Val Ser Gly Val Leu
 340 345 350
 Leu Gly Ala Val Gly Gly Ala Gly Ala Thr Ala Leu Val Phe Leu Ser
 355 360 365
 Phe Cys Val Ile Phe Ile Val Val Arg Ser Cys Arg Lys Lys Ser Ala
 370 375 380
 Arg Pro Ala Ala Asp Val Gly Asp Ile Gly Met Lys Asp Ala Asn Thr
 385 390 395 400
 Ile Arg Gly Ser Ala Ser Gln Gly Asn Leu Thr Glu Ser Trp Ala Asp
 405 410 415
 Asp Asn Pro Arg His His Gly Leu Ala Ala His Ser Ser Gly Glu Glu

420 425 430
 Arg Glu Ile Gln Tyr Ala Pro Leu Ser Phe His Lys Gly Glu Pro Gln
 435 440 445
 Asp Leu Ser Gly Gln Glu Ala Thr Asn Asn Glu Tyr Ser Glu Ile Lys
 450 455 460
 Ile Pro Lys
 465

<210> 344
 <211> 98
 <212> PRT
 <213> Homo sapiens

<400> 344
 Met His Cys Cys Gln Leu Pro Trp Arg Cys Ala Gln Ala Pro Gln Glu
 1 5 10 15
 Ala Phe Leu Leu Cys Leu Leu Phe Leu Ile Leu Val Leu Val Leu Leu
 20 25 30
 Gly Cys Ser Arg Gly Leu Pro Gly His Thr Pro Trp Arg Leu His Pro
 35 40 45
 Ala Ala Ala Ala Leu Leu Ala Pro Leu Leu His Asp Ala Leu Gly Ala
 50 55 60
 Cys Gly Phe Gln Gly Pro Glu Tyr Leu Leu Pro Cys Leu Leu Pro Leu
 65 70 75 80
 Pro Lys Pro Gly Gln Leu Gln Gly Pro Trp Gly Pro Leu Trp Ala Leu
 85 90 95
 Leu Pro

<210> 345
 <211> 365
 <212> PRT
 <213> Homo sapiens

<400> 345
 Met Phe Val Gly Leu Met Ala Phe Leu Leu Ser Phe Tyr Leu Ile Phe
 1 5 10 15
 Thr Asn Glu Gly Arg Ala Leu Lys Thr Ala Thr Ser Leu Ala Glu Gly
 20 25 30
 Leu Ser Leu Val Val Ser Pro Asp Ser Ile His Ser Val Ala Pro Glu
 35 40 45
 Asn Glu Gly Arg Leu Val His Ile Ile Gly Ala Leu Arg Thr Ser Lys
 50 55 60
 Leu Leu Ser Asp Pro Asn Tyr Gly Val His Leu Pro Ala Val Lys Leu

65	70	75	80
Arg Arg His Val Glu Met Tyr Gln Trp Val Glu Thr Glu Glu Ser Arg	85	90	95
Glu Tyr Thr Glu Asp Gly Gln Val Lys Lys Glu Thr Arg Tyr Ser Tyr	100	105	110
Asn Thr Glu Trp Arg Ser Glu Ile Ile Asn Ser Lys Asn Phe Asp Arg	115	120	125
Glu Ile Gly His Lys Asn Pro Ser Ala Met Ala Val Glu Ser Phe Met	130	135	140
Ala Thr Ala Pro Phe Val Gln Ile Gly Arg Phe Phe Leu Ser Ser Gly	145	150	155
Leu Ile Asp Lys Val Asp Asn Phe Lys Ser Leu Ser Leu Ser Lys Leu	165	170	175
Glu Asp Pro His Val Asp Ile Ile Arg Arg Gly Asp Phe Phe Tyr His	180	185	190
Ser Glu Asn Pro Lys Tyr Pro Glu Val Gly Asp Leu Arg Val Ser Phe	195	200	205
Ser Tyr Ala Gly Leu Ser Gly Asp Asp Pro Asp Leu Gly Pro Ala His	210	215	220
Val Val Thr Val Ile Ala Arg Gln Arg Gly Asp Gln Leu Val Pro Phe	225	230	235
Ser Thr Lys Ser Gly Asp Thr Leu Leu Leu Leu His His Gly Asp Phe	245	250	255
Ser Ala Glu Glu Val Phe His Arg Glu Leu Arg Ser Asn Ser Met Lys	260	265	270
Thr Trp Gly Leu Arg Ala Ala Gly Trp Met Ala Met Phe Met Gly Leu	275	280	285
Asn Leu Met Thr Arg Ile Leu Tyr Thr Leu Val Asp Trp Phe Pro Val	290	295	300
Phe Arg Asp Leu Val Asn Ile Gly Leu Lys Ala Phe Ala Phe Cys Val	305	310	315
Ala Thr Ser Leu Thr Leu Leu Thr Val Ala Ala Gly Trp Leu Phe Tyr	325	330	335
Arg Pro Leu Trp Ala Leu Leu Ile Ala Gly Leu Ala Leu Val Pro Ile	340	345	350
Leu Val Ala Arg Thr Arg Val Pro Ala Lys Lys Leu Glu	355	360	365

<210> 346

<211> 608

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (265)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (597)

<223> Xaa equals any amino acid

<400> 346

Met	Val	Gly	Thr	Lys	Leu	Arg	Gln	Thr	Lys	Asp	Ala	Leu	Phe	Thr	Ile	1	5	10	15
Leu	His	Asp	Leu	Arg	Pro	Gln	Asp	Arg	Phe	Ser	Ile	Ile	Gly	Phe	Ser	20	25	30	
Asn	Arg	Ile	Lys	Val	Trp	Lys	Asp	His	Leu	Ile	Ser	Val	Thr	Pro	Asp	35	40	45	
Ser	Ile	Arg	Asp	Gly	Lys	Val	Tyr	Ile	His	His	Met	Ser	Pro	Thr	Gly	50	55	60	
Gly	Thr	Asp	Ile	Asn	Gly	Val	Leu	Gln	Arg	Ala	Ile	Arg	Leu	Leu	Asn	65	70	75	80
Lys	Tyr	Val	Ala	His	Ser	Gly	Ile	Gly	Asp	Arg	Ser	Val	Ser	Leu	Ile	85	90	95	
Val	Phe	Leu	Thr	Asp	Gly	Lys	Pro	Thr	Val	Gly	Glu	Thr	His	Thr	Leu	100	105	110	
Lys	Ile	Leu	Asn	Asn	Thr	Arg	Glu	Ala	Ala	Arg	Gly	Gln	Val	Cys	Ile	115	120	125	
Phe	Thr	Ile	Gly	Ile	Gly	Asn	Asp	Val	Asp	Phe	Arg	Leu	Leu	Glu	Lys	130	135	140	
Leu	Ser	Leu	Glu	Asn	Cys	Gly	Leu	Thr	Arg	Arg	Val	His	Glu	Glu	Glu	145	150	155	160
Asp	Ala	Gly	Ser	Gln	Leu	Ile	Gly	Phe	Tyr	Asp	Glu	Ile	Arg	Thr	Pro	165	170	175	
Leu	Leu	Ser	Asp	Ile	Arg	Ile	Asp	Tyr	Pro	Pro	Ser	Ser	Val	Val	Gln	180	185	190	
Ala	Thr	Lys	Thr	Leu	Phe	Pro	Asn	Tyr	Phe	Asn	Gly	Ser	Glu	Ile	Ile	195	200	205	
Ile	Ala	Gly	Lys	Leu	Val	Asp	Arg	Lys	Leu	Asp	His	Leu	His	Val	Glu	210	215	220	
Val	Thr	Ala	Ser	Asn	Ser	Lys	Lys	Phe	Ile	Ile	Leu	Lys	Thr	Asp	Val	225	230	235	240
Pro	Val	Arg	Pro	Gln	Lys	Ala	Gly	Lys	Asp	Val	Thr	Gly	Ser	Pro	Arg	245	250	255	

Pro Gly Gly Asp Gly Glu Gly Asp Xaa Asn His Ile Glu Arg Leu Trp
 260 265 270
 Ser Tyr Leu Thr Thr Lys Glu Leu Leu Ser Ser Trp Leu Gln Ser Asp
 275 280 285
 Asp Glu Pro Glu Lys Glu Arg Leu Arg Gln Arg Ala Gln Ala Leu Ala
 290 295 300
 Val Ser Tyr Arg Phe Leu Thr Pro Phe Thr Ser Met Lys Leu Arg Gly
 305 310 315 320
 Pro Val Pro Arg Met Asp Gly Leu Glu Glu Ala His Gly Met Ser Ala
 325 330 335
 Ala Met Gly Pro Glu Pro Val Val Gln Ser Val Arg Gly Ala Gly Thr
 340 345 350
 Gln Pro Gly Pro Leu Leu Lys Lys Pro Tyr Gln Pro Arg Ile Lys Ile
 355 360 365
 Ser Lys Thr Ser Val Asp Gly Asp Pro His Phe Val Val Asp Phe Pro
 370 375 380
 Leu Ser Arg Leu Thr Val Cys Phe Asn Ile Asp Gly Gln Pro Gly Asp
 385 390 395 400
 Ile Leu Arg Leu Val Ser Asp His Arg Asp Ser Gly Val Thr Val Asn
 405 410 415
 Gly Glu Leu Ile Gly Ala Pro Ala Pro Pro Asn Gly His Lys Lys Gln
 420 425 430
 Arg Thr Tyr Leu Arg Thr Ile Thr Ile Leu Ile Asn Lys Pro Glu Arg
 435 440 445
 Ser Tyr Leu Glu Ile Thr Pro Ser Arg Val Ile Leu Asp Gly Gly Asp
 450 455 460
 Arg Leu Val Leu Pro Cys Asn Gln Ser Val Val Val Gly Ser Trp Gly
 465 470 475 480
 Leu Glu Val Ser Val Ser Ala Asn Ala Asn Val Thr Val Thr Ile Gln
 485 490 495
 Gly Ser Ile Ala Phe Val Ile Leu Ile His Leu Tyr Lys Lys Pro Ala
 500 505 510
 Pro Phe Gln Arg His His Leu Gly Phe Tyr Ile Ala Asn Ser Glu Gly
 515 520 525
 Leu Ser Ser Asn Cys His Gly Leu Leu Gly Gln Phe Leu Asn Gln Asp
 530 535 540
 Ala Arg Leu Thr Glu Asp Pro Ala Gly Pro Ser Gln Asn Leu Thr His
 545 550 555 560
 Pro Leu Leu Leu Gln Val Gly Glu Gly Pro Glu Ala Val Leu Thr Val
 565 570 575
 Lys Gly His Gln Val Pro Val Val Trp Lys Gln Arg Lys Ile Tyr Asn

580 585 590
 Gly Glu Glu Gln Xaa Asp Cys Trp Phe Ala Arg Asn Met Pro Pro Asn
 595 600 605

<210> 347
 <211> 56
 <212> PRT
 <213> Homo sapiens

<400> 347
 Met Phe Tyr Lys Leu Thr Leu Ile Leu Cys Glu Leu Ser Val Ala Gly
 1 5 10 15
 Val Thr Gln Ala Ala Ser Gln Arg Pro Leu Gln Arg Leu Pro Arg His
 20 25 30
 Ile Cys Ser Gln Arg Ser Ser Ser Trp Glu Met Pro Pro Gln Gly Pro
 35 40 45
 Ala Pro Asp His Val Gly Arg Ala
 50 55

<210> 348
 <211> 540
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (137)
 <223> Xaa equals any amino acid

<400> 348
 Met Val Arg Thr Asp Gly His Thr Leu Ser Glu Lys Arg Asn Tyr Gln
 1 5 10 15
 Val Thr Asn Ser Met Phe Gly Ala Ser Arg Lys Lys Phe Val Glu Gly
 20 25 30
 Val Asp Ser Asp Tyr His Asp Glu Asn Met Tyr Tyr Ser Gln Ser Ser
 35 40 45
 Met Phe Pro His Arg Ser Glu Lys Asp Met Leu Ala Ser Pro Ser Thr
 50 55 60
 Ser Gly Gln Leu Ser Gln Phe Gly Ala Ser Leu Tyr Gly Gln Gln Ser
 65 70 75 80
 Ala Leu Gly Leu Pro Met Arg Gly Met Ser Asn Asn Thr Pro Gln Leu
 85 90 95
 Asn Arg Ser Leu Ser Gln Gly Thr Gln Leu Pro Ser His Val Thr Pro
 100 105 110

Thr Thr Gly Val Pro Thr Met Ser Leu His Thr Pro Pro Ser Pro Ser
 115 120 125
 Arg Gly Ile Leu Pro Met Asn Pro Xaa Asn Met Met Asn His Ser Gln
 130 135 140
 Val Gly Gln Gly Ile Gly Ile Pro Ser Arg Thr Asn Ser Met Ser Ser
 145 150 155 160
 Ser Gly Leu Gly Ser Pro Asn Arg Ser Ser Pro Ser Ile Ile Cys Met
 165 170 175
 Pro Lys Gln Gln Pro Ser Arg Gln Pro Phe Thr Val Asn Ser Met Ser
 180 185 190
 Gly Phe Gly Met Asn Arg Asn Gln Ala Phe Gly Met Asn Asn Ser Leu
 195 200 205
 Ser Ser Asn Ile Phe Asn Gly Thr Asp Gly Ser Glu Asn Val Thr Gly
 210 215 220
 Leu Asp Leu Ser Asp Phe Pro Ala Leu Ala Asp Arg Asn Arg Arg Glu
 225 230 235 240
 Gly Ser Gly Asn Pro Thr Pro Leu Ile Asn Pro Leu Ala Gly Arg Ala
 245 250 255
 Pro Tyr Val Gly Met Val Thr Lys Pro Ala Asn Glu Gln Ser Gln Asp
 260 265 270
 Phe Ser Ile His Asn Glu Asp Phe Pro Ala Leu Pro Gly Ser Ser Tyr
 275 280 285
 Lys Asp Pro Thr Ser Ser Asn Asp Asp Ser Lys Ser Asn Leu Asn Thr
 290 295 300
 Ser Gly Lys Thr Thr Ser Ser Thr Asp Gly Pro Lys Phe Pro Gly Asp
 305 310 315 320
 Lys Ser Ser Thr Thr Gln Asn Asn Asn Gln Gln Lys Lys Gly Ile Gln
 325 330 335
 Val Leu Pro Asp Gly Arg Val Thr Asn Ile Pro Gln Gly Met Val Thr
 340 345 350
 Asp Gln Phe Gly Met Ile Gly Leu Leu Thr Phe Ile Arg Ala Ala Glu
 355 360 365
 Thr Asp Pro Gly Met Val His Leu Ala Leu Gly Ser Asp Leu Thr Thr
 370 375 380
 Leu Gly Leu Asn Leu Asn Ser Pro Glu Asn Leu Tyr Pro Lys Phe Ala
 385 390 395 400
 Ser Pro Trp Ala Ser Ser Pro Cys Arg Pro Gln Asp Ile Asp Phe His
 405 410 415
 Val Pro Ser Glu Tyr Leu Thr Asn Ile His Ile Arg Asp Lys Leu Ala
 420 425 430

Ala Ile Lys Leu Gly Arg Tyr Gly Glu Asp Leu Leu Phe Tyr Leu Tyr
 435 440 445

Tyr Met Asn Gly Gly Asp Val Leu Gln Leu Leu Ala Ala Val Glu Leu
 450 455 460

Phe Asn Arg Asp Trp Arg Tyr His Lys Glu Glu Arg Val Trp Ile Thr
 465 470 475 480

Arg Ala Pro Gly Met Glu Pro Thr Met Lys Thr Asn Thr Tyr Glu Arg
 485 490 495

Gly Thr Tyr Tyr Phe Phe Asp Cys Leu Asn Trp Arg Lys Val Ala Lys
 500 505 510

Glu Phe His Leu Glu Tyr Asp Lys Leu Glu Glu Arg Pro His Leu Pro
 515 520 525

Ser Thr Phe Asn Tyr Asn Pro Ala Gln Gln Ala Phe
 530 535 540

<210> 349

<211> 99

<212> PRT

<213> Homo sapiens

<400> 349

Met Leu Phe Phe Leu Ser Leu Phe Leu Ser Leu Leu Leu Thr Leu Ser
 1 5 10 15

Leu Pro Ser Phe Leu Pro Phe Ser Phe Phe Phe Ser Leu Phe Pro
 20 25 30

His Leu Ser Ala Cys Leu Leu Pro Ser Leu Pro Ser Pro Phe Pro
 35 40 45

Leu Pro Pro Ser Leu Pro Ser Phe Leu Pro Ser Phe Leu Pro Ser Phe
 50 55 60

Leu Pro Ser Leu Leu Ser Pro Ser Phe Pro Ala Phe Phe Pro Ser Phe
 65 70 75 80

Cys Gln Leu Ala Arg Arg Ser Pro Arg Lys Ser Thr Gln Met Leu Gln
 85 90 95

Ser Thr Ser

<210> 350

<211> 66

<212> PRT

<213> Homo sapiens

<400> 350

Met Asn Tyr Ile Phe Leu Leu Met Ala Leu Pro His Leu Ile Ala Ile
 1 5 10 15

Ala Leu Thr Trp Gly Arg Tyr Ser Phe Ser Cys Leu Ala Asn Lys Glu
 20 25 30

Thr Glu Phe Gln Arg Cys Gln Val Thr Cys Leu Leu His Thr Leu Gly
 35 40 45

Val Leu Met Phe Asn Phe Glu Leu Arg Ser Ile Trp Leu Glu Ser Ser
 50 55 60

Leu His
 65

<210> 351
 <211> 72
 <212> PRT
 <213> Homo sapiens

<400> 351
 Met Arg His Thr Cys Ile Val Asn Ile Ala Ala Ser Leu Leu Val Ala
 1 5 10 15

Asn Thr Trp Phe Ile Val Val Ala Ala Ile Gln Asp Asn Arg Tyr Ile
 20 25 30

Leu Cys Lys Thr Ala Cys Val Ala Ala Thr Phe Phe Ile His Phe Phe
 35 40 45

Tyr Leu Ser Val Phe Phe Trp Met Leu Thr Leu Gly Pro His Ala Val
 50 55 60

Leu Ser Pro Gly Phe His Ser Ala
 65 70

<210> 352
 <211> 41
 <212> PRT
 <213> Homo sapiens

<400> 352
 Met Pro Pro Lys Gln Ile Pro Leu Thr Ser Leu Ser Leu Leu Ala Leu
 1 5 10 15

Leu Leu Phe Phe Phe Phe Lys Ile Phe Cys Leu Leu Phe Leu Phe Tyr
 20 25 30

Pro Leu Pro Asp Glu Ser Glu His Phe
 35 40

<210> 353
 <211> 47
 <212> PRT
 <213> Homo sapiens

<400> 353
 Met Leu Ile Ser Val Asp Ser Asn Val Pro Val Val Phe Leu Leu Leu

1 5 10 15
Phe Ile Leu Val Ile Leu Cys His Met Glu Cys Lys Gly His Ile Tyr
 20 25 30
Ile Cys Val Cys Val Cys Val Tyr Met Tyr Ile Phe Lys Asn Ile
 35 40 45

<210> 354
<211> 121
<212> PRT
<213> Homo sapiens

<400> 354
Met His Arg Ser Glu Pro Phe Leu Lys Met Ser Leu Leu Ile Leu Leu
1 5 10 15
Phe Leu Gly Leu Ala Glu Ala Cys Thr Pro Arg Glu Val Asn Leu Leu
 20 25 30
Lys Gly Ile Ile Gly Leu Met Ser Arg Leu Ser Pro Asp Glu Ile Leu
 35 40 45
Gly Leu Leu Ser Leu Gln Val Leu His Glu Glu Thr Ser Gly Cys Lys
 50 55 60
Glu Glu Val Lys Pro Phe Ser Gly Thr Thr Pro Ser Arg Lys Pro Leu
 65 70 75 80
Pro Lys Arg Lys Asn Thr Trp Asn Phe Leu Lys Cys Ala Tyr Met Val
 85 90 95
Met Thr Tyr Leu Phe Val Ser Tyr Asn Lys Gly Asp Trp Phe Thr Phe
 100 105 110
Ser Ser Gln Val Leu Leu Pro Leu Leu
 115 120

<210> 355
<211> 116
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (46)
<223> Xaa equals any amino acid

<400> 355
Met Pro Gly Gly Thr Arg Cys Arg Val Leu Leu Leu Ser Leu Thr Phe
1 5 10 15
Gly Thr Ser Met Ala Cys Gly Asn Val Gly Leu Arg Leu Cys Pro Trp
 20 25 30
Thr Trp His Asn Trp Leu Leu Pro Pro His Leu Cys Ser Xaa Trp Pro
 35 40 45

Cys Arg Arg Cys Cys Trp Ala Ala Ala Thr Thr His Phe Ser Trp Pro
 50 55 60
 Pro Trp Val Arg Ser Ala Trp Gly Pro Pro Ala Ala Trp Leu Glu Ser
 65 70 75 80
 Ser Gly His Pro Leu Pro Ala Val Ala Ser Cys Ser Gln Pro Pro Ala
 85 90 95
 Ser Ala Asp Ser Ser Arg Phe Ser Lys Val Pro Cys Cys Arg Arg Arg
 100 105 110
 Gly Trp Thr Arg
 115

<210> 356
 <211> 86
 <212> PRT
 <213> Homo sapiens

<400> 356
 Met Pro Trp His Val Cys Phe Phe Leu Ser Gly Leu Leu Phe Pro Ser
 1 5 10 15
 Pro Gln Thr Ser Leu Gln His Leu Cys Leu Leu Thr Ser Leu Ile Leu
 20 25 30
 Gly Val Thr Ile Ser Ala Tyr Glu His Ala Ile Asn Leu Pro Ser Leu
 35 40 45
 Gln Asn Ser Leu Leu Thr Ser His Pro Ser Val Ala Ala Leu Ser Leu
 50 55 60
 Leu Ser Ser Ser Leu Gln Gln Asn Ser Leu Lys Glu Leu Leu Ala Gly
 65 70 75 80
 His Ser Gly Ser Leu Leu
 85

<210> 357
 <211> 10
 <212> PRT
 <213> Homo sapiens

<400> 357
 Gly Leu Leu Tyr Ile Met Tyr Cys Asn Ile
 1 5 10

<210> 358
 <211> 45
 <212> PRT
 <213> Homo sapiens

<400> 358

Met Val Lys Trp Ile Ile Leu Ser Cys Leu Ile Leu Lys Gly Lys Arg
 1 5 10 15

Thr Leu Asn Ser Ser Thr Phe Tyr Ala Ala Asn Lys Ser Ser Thr Ile
 20 25 30

Asn Arg Asn Leu Ser Trp Gln Ala Leu Pro Phe Thr His
 35 40 45

<210> 359

<211> 38

<212> PRT

<213> Homo sapiens

<400> 359

Met Leu Lys Leu Ala Thr Ile Leu Leu Thr Leu Leu Leu Lys Asn Leu
 1 5 10 15

Asp Ala Gly Leu Thr Asp Lys Leu Ser Arg Ser Asn Phe Ile Thr Asp
 20 25 30

Phe Ile Leu Thr Lys Tyr
 35

<210> 360

<211> 44

<212> PRT

<213> Homo sapiens

<400> 360

Met Pro Cys His Gly Leu Leu Ala Gln Gly Leu Ser Leu Ala Pro Leu
 1 5 10 15

Pro Pro Trp Ala Leu Cys Cys Val Gly Val Ser Arg Ala Leu Gln Asp
 20 25 30

Ile Gln Gln His Pro Arg Pro Pro Ala Pro Cys Gln
 35 40

<210> 361

<211> 34

<212> PRT

<213> Homo sapiens

<400> 361

Met Gln Ala Arg Trp Phe His Ile Leu Gly Met Met Met Phe Ile Trp
 1 5 10 15

Ser Ser Ala His Gln Tyr Lys Cys Pro Cys Tyr Ser Arg Gln Ser Gln
 20 25 30

Glu Lys

<210> 362

<211> 68

<212> PRT

<213> Homo sapiens

<400> 362

Met Val His Asn Cys Leu Leu Leu Leu Lys Phe Leu Leu Leu Phe Cys
 1 5 10 15

Phe Pro Leu Ile Ser Tyr Gln Leu Met Asn Gly Ser Leu Gln Ser Leu
 20 25 30

Gln Arg Leu Arg Met Ile Gln Asn Val Gln Cys Ile Val Leu Asn Lys
 35 40 45

Gln Glu Ala Glu Phe Leu Met Gly Ile Ser Phe Gln Ile Tyr Asp Trp
 50 55 60

Ser Leu Gly Phe
 65

<210> 363

<211> 162

<212> PRT

<213> Homo sapiens

<400> 363

Met Thr Ser Asn Phe Pro Phe Cys Thr Leu Ile Leu Gly Ile Ala Gln
 1 5 10 15

Ala Gln Ala Cys Pro Gly Cys Pro Gly Asp Trp Pro Gly Leu Gly Ser
 20 25 30

Gly Val Gly Glu Gly Leu His His Ile Arg Thr Cys Arg Thr Pro Ile
 35 40 45

Pro Cys Ser Pro Pro Ala Pro Ala Ala Ala Cys Leu Gly Ser Gly His
 50 55 60

Ala Arg Leu Pro Cys Val Leu Arg Leu Trp Pro Val Pro Ala Asn Leu
 65 70 75 80

Ser Ser Pro Phe Arg Leu Glu Ala Leu His Cys Ser Phe Trp Ser Ser
 85 90 95

Pro Leu Leu Pro Ala Pro His Leu Ala Phe Phe Gly Phe Arg Asp Leu
 100 105 110

Leu Thr Asp Phe Leu Leu Ala Ala Cys Leu Leu Thr Phe Gln Lys Thr
 115 120 125

Pro Leu Glu Leu Pro Met Ala Val Val His Leu Leu Val Ala Thr Pro
 130 135 140

Cys Tyr Gln Met Leu Asp Asn Leu Pro Leu Pro Ser Ala Ala Ala Asn
 145 150 155 160

Trp Cys

<210> 364
 <211> 47
 <212> PRT
 <213> Homo sapiens

<400> 364
 Met Leu Leu Phe Ser Ser Arg Phe Ile Met Phe Leu Trp Pro Pro Val
 1 5 10 15
 Ser Gly Val Cys Leu Ser Phe Ile Arg Asp Arg Ser Phe Leu Pro Met
 20 25 30
 Cys His Phe Ile Tyr Val Leu Ile Leu Cys Asn Ser Ile Ala Leu
 35 40 45

<210> 365
 <211> 79
 <212> PRT
 <213> Homo sapiens

<400> 365
 Met Thr Leu Met Cys Leu Cys Leu Ser Val Thr Val Leu His Pro Leu
 1 5 10 15
 Arg Ser Lys Glu Arg Leu Ser Gly Thr Phe Cys Gly Tyr Ser Ser Ser
 20 25 30
 Trp Cys Ser Pro Ala Ser Glu Ser Ser Ser Pro Gly Ser Leu Leu Thr
 35 40 45
 Cys Ala Ala Ser Gly Ser His Pro Asp Cys Pro Leu Ser Gln Arg Leu
 50 55 60
 Leu Gly Val Gln Leu Ala Ala Leu Gly Arg Pro Gln Gly Leu Phe
 65 70 75

<210> 366
 <211> 292
 <212> PRT
 <213> Homo sapiens

<400> 366
 Met Leu Arg Val Leu Cys Leu Leu Arg Pro Trp Arg Pro Leu Arg Ala
 1 5 10 15
 Arg Gly Cys Ala Ser Asp Gly Ala Ala Gly Gly Ser Glu Ile Gln Val
 20 25 30
 Arg Ala Leu Ala Gly Pro Asp Gln Gly Ile Thr Glu Ile Leu Met Asn
 35 40 45
 Arg Pro Ser Ala Arg Asn Ala Leu Gly Asn Val Phe Val Ser Glu Leu
 50 55 60

Leu Glu Thr Leu Ala Gln Leu Arg Glu Asp Arg Gln Val Arg Val Leu
 65 70 75 80
 Leu Phe Arg Ser Gly Val Lys Gly Val Phe Cys Ala Gly Ala Asp Leu
 85 90 95
 Lys Glu Arg Glu Gln Met Ser Glu Ala Glu Val Gly Val Phe Val Gln
 100 105 110
 Arg Leu Arg Gly Leu Met Asn Asp Ile Ala Ala Phe Pro Ala Pro Thr
 115 120 125
 Ile Ala Ala Met Asp Gly Phe Ala Leu Gly Gly Gly Leu Glu Leu Ala
 130 135 140
 Leu Ala Cys Asp Leu Arg Val Ala Ala Ser Ser Ala Val Met Gly Leu
 145 150 155 160
 Ile Glu Thr Thr Arg Gly Leu Leu Pro Gly Ala Gly Gly Thr Gln Arg
 165 170 175
 Leu Pro Arg Cys Leu Gly Val Ala Leu Ala Lys Glu Leu Ile Phe Thr
 180 185 190
 Gly Arg Arg Leu Ser Gly Thr Glu Ala His Val Leu Gly Leu Val Asn
 195 200 205
 His Ala Val Ala Gln Asn Glu Glu Gly Asp Ala Ala Tyr Gln Arg Ala
 210 215 220
 Arg Ala Leu Ala Gln Glu Ile Leu Pro Gln Ala Pro Ile Ala Val Arg
 225 230 235 240
 Leu Gly Lys Val Ala Ile Asp Arg Gly Thr Glu Val Asp Ile Ala Ser
 245 250 255
 Gly Met Ala Ile Glu Gly Met Cys Tyr Ala Gln Asn Ile Pro Thr Arg
 260 265 270
 Asp Arg Leu Glu Gly Met Ala Ala Phe Arg Glu Lys Arg Thr Pro Lys
 275 280 285
 Phe Val Gly Lys
 290

<210> 367

<211> 121

<212> PRT

<213> Homo sapiens

<400> 367

Met Ile Met Ala Gln Lys Ile Gly Gly Leu Thr Trp Trp Ala Ile Met
 1 5 10 15

Phe Ile Ile Leu Phe Glu Ile Thr Gly Thr Ser Ser Ser Phe Leu Arg
 20 25 30

Ile Asn Ala Leu Pro His Phe Ser Met Asn Arg Cys Gly Glu Ala Tyr

35 40 45
 Phe Pro Phe Ser Tyr Leu Tyr Thr Ser Leu Gln Lys Gln Phe Leu Met
 50 55 60
 Lys Val Ser Gly Ile Val Lys Asn Leu Arg Gly Asn Asp Asp Trp Arg
 65 70 75 80
 Cys Phe Gly Val Phe Phe Cys Ile His Phe Leu Met Arg Lys Val Leu
 85 90 95
 Asn Val Val Gln Val Arg Pro Asn Tyr Tyr Leu Thr Ile Ile Gly Arg
 100 105 110
 Phe Tyr Val Ser Val Lys Val Phe Lys
 115 120

<210> 368
 <211> 50
 <212> PRT
 <213> Homo sapiens

<400> 368
 Met Tyr Ile Tyr Leu Ile His Leu Cys Met Cys Val Tyr Ile Tyr Ile
 1 5 10 15
 Tyr Ile Leu Leu Ile Ile Tyr Thr Leu Asp Pro Glu Pro Pro Ser Trp
 20 25 30
 Ser Pro Lys Leu Asp Ser His Leu Ser Leu Arg Gln Pro Ser Asn Asp
 35 40 45
 Arg Phe
 50

<210> 369
 <211> 44
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (11)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (34)
 <223> Xaa equals any amino acid

<400> 369
 Met Val Leu His Cys Ile Ala Trp Leu Gln Xaa Gly Ile Ser Phe Leu
 1 5 10 15
 Phe Leu Phe Leu Cys Val Ile Ala Ile Gly Ala Thr Asn Phe Ala Ser
 20 25 30

Pro Xaa Phe Tyr Lys Leu Val Ser Ser Gly Val Ala
 35 40

<210> 370
 <211> 89
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (12)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (13)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (72)
 <223> Xaa equals any amino acid

<400> 370
 Met Ser Gly Gly Leu Ser Phe Leu Leu Leu Val Xaa Xaa Gly Thr Gln
 1 5 10 15
 Ser Pro Leu His Leu Ala Gly Ser Cys Pro Gly Gln Thr His Leu Ser
 20 25 30
 Phe Pro Leu Gly Gln Asp Arg Gly Gln Gln Leu Gln Gln Lys Gln Gln
 35 40 45
 Asp Leu Glu Gln Glu Gly Leu Glu Ala Thr Gln Gly Leu Leu Ala Gly
 50 55 60
 Glu Trp Ala Pro Pro Leu Trp Xaa Leu Gly Ser Leu Phe Gln Ala Phe
 65 70 75 80
 Val Lys Arg Glu Ser Gln Ala Tyr Ala
 85

<210> 371
 <211> 508
 <212> PRT
 <213> Homo sapiens

<400> 371
 Met Asp Pro Lys Leu Gly Arg Met Ala Ala Ser Leu Leu Ala Val Leu
 1 5 10 15
 Leu Leu Leu Leu Leu Glu Arg Gly Met Phe Ser Ser Pro Ser Pro Pro
 20 25 30
 Pro Ala Leu Leu Glu Lys Val Phe Gln Tyr Ile Asp Leu His Gln Asp
 35 40 45

Glu Phe Val Gln Thr Leu Lys Glu Trp Val Ala Ile Glu Ser Asp Ser
 50 55 60
 Val Gln Pro Val Pro Arg Phe Arg Gln Glu Leu Phe Arg Met Met Ala
 65 70 75 80
 Val Ala Ala Asp Thr Leu Gln Arg Leu Gly Ala Arg Val Ala Ser Val
 85 90 95
 Asp Met Gly Pro Gln Gln Leu Pro Asp Gly Gln Ser Leu Pro Ile Pro
 100 105 110
 Pro Val Ile Leu Ala Glu Leu Gly Ser Asp Pro Thr Lys Gly Thr Val
 115 120 125
 Cys Phe Tyr Gly His Leu Asp Val Gln Pro Ala Asp Arg Gly Asp Gly
 130 135 140
 Trp Leu Thr Asp Pro Tyr Val Leu Thr Glu Val Asp Gly Lys Leu Tyr
 145 150 155 160
 Gly Arg Gly Ala Thr Asp Asn Lys Gly Pro Val Leu Ala Trp Ile Asn
 165 170 175
 Ala Val Ser Ala Phe Arg Ala Leu Glu Gln Asp Leu Pro Val Asn Ile
 180 185 190
 Lys Phe Ile Ile Glu Gly Met Glu Glu Ala Gly Ser Val Ala Leu Glu
 195 200 205
 Glu Leu Val Glu Lys Glu Lys Asp Arg Phe Phe Ser Gly Val Asp Tyr
 210 215 220
 Ile Val Ile Ser Asp Asn Leu Trp Ile Ser Gln Arg Lys Pro Ala Ile
 225 230 235 240
 Thr Tyr Gly Thr Arg Gly Asn Ser Tyr Phe Met Val Glu Val Lys Cys
 245 250 255
 Arg Asp Gln Asp Phe His Ser Gly Thr Phe Gly Gly Ile Leu His Glu
 260 265 270
 Pro Met Ala Asp Leu Val Ala Leu Leu Gly Ser Leu Val Asp Ser Ser
 275 280 285
 Gly His Ile Leu Val Pro Gly Ile Tyr Asp Glu Val Val Pro Leu Thr
 290 295 300
 Glu Glu Glu Ile Asn Thr Tyr Lys Ala Ile His Leu Asp Leu Glu Glu
 305 310 315 320
 Tyr Arg Asn Ser Ser Arg Val Glu Lys Phe Leu Phe Asp Thr Lys Glu
 325 330 335
 Glu Ile Leu Met His Leu Trp Arg Tyr Pro Ser Leu Ser Ile His Gly
 340 345 350
 Ile Glu Gly Ala Phe Asp Glu Pro Gly Thr Lys Thr Val Ile Pro Gly
 355 360 365
 Arg Val Ile Gly Lys Phe Ser Ile Arg Leu Val Pro His Met Asn Val

370 375 380
 Ser Ala Val Glu Lys Gln Val Thr Arg His Leu Glu Asp Val Phe Ser
 385 390 395 400
 Lys Arg Asn Ser Ser Asn Lys Met Val Val Ser Met Thr Leu Gly Leu
 405 410 415
 His Pro Trp Ile Ala Asn Ile Asp Asp Thr Gln Tyr Leu Ala Ala Lys
 420 425 430
 Arg Ala Ile Arg Thr Val Phe Gly Thr Glu Pro Asp Met Ile Arg Asp
 435 440 445
 Gly Ser Thr Ile Pro Ile Ala Lys Met Phe Gln Glu Ile Val His Lys
 450 455 460
 Ser Val Val Leu Ile Pro Leu Gly Ala Val Asp Asp Gly Glu His Ser
 465 470 475 480
 Gln Asn Glu Lys Ile Asn Arg Trp Asn Tyr Ile Glu Gly Thr Lys Leu
 485 490 495
 Phe Ala Ala Phe Phe Leu Glu Met Ala Gln Leu His
 500 505

<210> 372
 <211> 77
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (69)
 <223> Xaa equals any amino acid

<400> 372
 Met Thr Gly Gln Ile Pro Arg Leu Ser Lys Val Asn Leu Phe Thr Leu
 1 5 10 15
 Leu Ser Leu Trp Met Glu Leu Phe Pro Ala Glu Ala Gln Arg Gln Lys
 20 25 30
 Ser Gln Lys Asn Glu Glu Gly Lys His Gly Pro Leu Gly Asp Asn Glu
 35 40 45
 Glu Arg Thr Arg Val Ser Thr Asp Lys Arg Gln Asp Tyr Trp Glu Gln
 50 55 60
 Leu Arg Cys Leu Xaa Glu Arg Phe Thr Ile Thr Ala Gly
 65 70 75

<210> 373
 <211> 44
 <212> PRT
 <213> Homo sapiens

<400> 373

Met Arg Leu Arg Asn Gly Thr Val Ala Thr Ala Leu Ala Phe Ile Thr
 1 5 10 15
 Ser Phe Leu Thr Leu Ser Trp Tyr Thr Thr Trp Gln Asn Gly Lys Gly
 20 25 30
 Lys Glu Asn Asp Ser Glu Asn Val His Glu Met Tyr
 35 40

<210> 374

<211> 327

<212> PRT

<213> Homo sapiens

<400> 374

Met Ala Cys Arg Lys Leu Ala Val Ala His Pro Leu Leu Leu Leu Arg
 1 5 10 15
 His Leu Pro Met Ile Ala Ala Leu Leu His Gly Arg Thr His Leu Asn
 20 25 30
 Phe Gln Glu Phe Arg Gln Gln Asn His Leu Ser Cys Phe Leu His Val
 35 40 45
 Leu Gly Leu Leu Glu Leu Leu Gln Pro His Val Phe Arg Ser Glu His
 50 55 60
 Gln Gly Ala Leu Trp Asp Cys Leu Leu Ser Phe Ile Arg Leu Leu Leu
 65 70 75 80
 Asn Tyr Arg Lys Ser Ser Arg His Leu Ala Ala Phe Ile Asn Lys Phe
 85 90 95
 Val Gln Phe Ile His Lys Tyr Ile Thr Tyr Asn Ala Pro Ala Ala Ile
 100 105 110
 Ser Phe Leu Gln Lys His Ala Asp Pro Leu His Asp Leu Ser Phe Asp
 115 120 125
 Asn Ser Asp Leu Val Met Leu Lys Ser Leu Leu Ala Gly Leu Ser Leu
 130 135 140
 Pro Ser Arg Asp Asp Arg Thr Asp Arg Gly Leu Asp Glu Glu Gly Glu
 145 150 155 160
 Glu Glu Ser Ser Ala Gly Ser Leu Pro Leu Val Ser Val Ser Leu Phe
 165 170 175
 Thr Pro Leu Thr Ala Ala Glu Met Ala Pro Tyr Met Lys Arg Leu Ser
 180 185 190
 Arg Gly Gln Thr Val Glu Asp Leu Leu Glu Val Leu Ser Asp Ile Asp
 195 200 205
 Glu Met Ser Arg Arg Arg Pro Glu Ile Leu Ser Phe Phe Ser Thr Asn
 210 215 220
 Leu Gln Arg Leu Met Ser Ser Ala Glu Glu Cys Cys Arg Asn Leu Ala

225 230 235 240
 Phe Ser Leu Ala Leu Arg Ser Met Gln Asn Ser Pro Ser Ile Ala Ala
 245 250 255
 Ala Phe Leu Pro Thr Phe Met Tyr Cys Leu Gly Ser Gln Asp Phe Glu
 260 265 270
 Val Val Gln Thr Ala Leu Arg Asn Leu Pro Glu Tyr Ala Leu Leu Cys
 275 280 285
 Gln Glu His Ala Ala Val Leu Leu His Arg Ala Phe Leu Val Gly Met
 290 295 300
 Tyr Gly Gln Met Asp Pro Ser Ala Gln Ile Ser Glu Ala Leu Arg Ile
 305 310 315 320
 Leu His Met Glu Ala Val Met
 325

<210> 375
 <211> 91
 <212> PRT
 <213> Homo sapiens

<400> 375
 Met Gly Asp Lys Leu Gly Met Ala Arg Ala Pro Ser Val Ala Leu Ala
 1 5 10 15
 Gln Leu Trp Leu Ile Cys Leu Cys Pro Glu Ser Leu Ala Ser Phe Val
 20 25 30
 Gln Ala Val Pro Trp Lys Val Leu Gln Pro Ser Ser Asn Arg Ser Thr
 35 40 45
 Asp Cys Ser Pro His Met Arg Pro Thr Cys Glu Thr Leu Gly Ser Arg
 50 55 60
 Lys Ala Gln Asp Leu Val Leu Asp Thr Met Cys Leu Ser Thr Asp Asp
 65 70 75 80
 Cys Gln Gly Leu Ile Cys Arg Gly His Arg Ser
 85 90

<210> 376
 <211> 243
 <212> PRT
 <213> Homo sapiens

<400> 376
 Met Gly Thr Leu Pro Trp Leu Leu Ala Phe Phe Ile Leu Gly Leu Gln
 1 5 10 15
 Ala Trp Asp Thr Pro Thr Ile Val Ser Arg Lys Glu Trp Gly Ala Arg
 20 25 30
 Pro Leu Ala Cys Arg Ala Leu Leu Thr Leu Pro Val Ala Tyr Ile Ile

35 40 45
 Thr Asp Gln Leu Pro Gly Met Gln Cys Gln Gln Gln Ser Val Cys Ser
 50 55 60
 Gln Met Leu Arg Gly Leu Gln Ser His Ser Val Tyr Thr Ile Gly Trp
 65 70 75 80
 Cys Asp Val Ala Tyr Asn Phe Leu Val Gly Asp Asp Gly Arg Val Tyr
 85 90 95
 Glu Gly Val Gly Trp Asn Ile Gln Gly Leu His Thr Gln Gly Tyr Asn
 100 105 110
 Asn Ile Ser Leu Gly Ile Ala Phe Phe Gly Asn Lys Ile Ser Ser Ser
 115 120 125
 Pro Ser Pro Ala Ala Leu Ser Ala Ala Glu Gly Leu Ile Ser Tyr Ala
 130 135 140
 Ile Gln Lys Gly His Leu Ser Pro Arg Tyr Ile Gln Pro Leu Leu Leu
 145 150 155 160
 Lys Glu Glu Thr Cys Leu Asp Pro Gln His Pro Val Met Pro Arg Lys
 165 170 175
 Val Cys Pro Asn Ile Ile Lys Arg Ser Ala Trp Glu Ala Arg Glu Thr
 180 185 190
 His Cys Pro Lys Met Asn Leu Pro Ala Lys Tyr Val Ile Ile Ile His
 195 200 205
 Thr Ala Gly Thr Ser Cys Thr Val Ser Thr Asp Cys Gln Thr Val Val
 210 215 220
 Arg Asn Ile Gln Ser Phe His Met Asp Thr Arg Asn Phe Cys Asp Ile
 225 230 235 240
 Gly Tyr Gln

<210> 377

<211> 80

<212> PRT

<213> Homo sapiens

<400> 377

Met Lys Leu Ser Gly Met Phe Leu Leu Leu Ser Leu Ala Leu Phe Cys
 1 5 10 15
 Phe Leu Thr Gly Val Phe Ser Gln Gly Gly Gln Val Asp Cys Gly Glu
 20 25 30
 Phe Gln Asp Thr Lys Val Tyr Cys Thr Arg Glu Ser Asn Pro His Cys
 35 40 45
 Gly Ser Asp Gly Gln Thr Tyr Gly Asn Lys Cys Ala Phe Cys Lys Ala
 50 55 60

Ile Val Lys Ser Gly Gly Lys Ile Ser Leu Lys His Pro Gly Lys Cys
 65 70 75 80

<210> 378

<211> 301

<212> PRT

<213> Homo sapiens

<400> 378

Met Ala Arg His Gly Leu Pro Leu Leu Pro Leu Leu Ser Leu Leu Val
 1 5 10 15

Gly Ala Trp Leu Lys Leu Gly Asn Gly Gln Ala Thr Ser Met Val Gln
 20 25 30

Leu Gln Gly Gly Arg Phe Leu Met Gly Thr Asn Ser Pro Asp Ser Arg
 35 40 45

Asp Gly Glu Gly Pro Val Arg Glu Ala Thr Val Lys Pro Phe Ala Ile
 50 55 60

Asp Ile Phe Pro Val Thr Asn Lys Asp Phe Arg Asp Phe Val Arg Glu
 65 70 75 80

Lys Lys Tyr Arg Thr Glu Ala Glu Met Phe Gly Trp Ser Phe Val Phe
 85 90 95

Glu Asp Phe Val Ser Asp Glu Leu Arg Asn Lys Ala Thr Gln Pro Met
 100 105 110

Lys Ser Val Leu Trp Trp Leu Pro Val Glu Lys Ala Phe Trp Arg Gln
 115 120 125

Pro Ala Gly Pro Gly Ser Gly Ile Arg Glu Arg Leu Glu His Pro Val
 130 135 140

Leu His Val Ser Trp Asn Asp Ala Arg Ala Tyr Cys Ala Trp Arg Gly
 145 150 155 160

Lys Arg Leu Pro Thr Glu Glu Glu Trp Glu Phe Ala Ala Arg Gly Gly
 165 170 175

Leu Lys Gly Gln Val Tyr Pro Trp Gly Asn Trp Phe Gln Pro Asn Arg
 180 185 190

Thr Asn Leu Trp Gln Gly Lys Phe Pro Lys Gly Asp Lys Ala Glu Asp
 195 200 205

Gly Phe His Gly Val Ser Pro Val Asn Ala Phe Pro Ala Gln Asn Asn
 210 215 220

Tyr Gly Leu Tyr Asp Leu Leu Gly Asn Val Trp Glu Trp Thr Ala Ser
 225 230 235 240

Pro Tyr Gln Ala Ala Glu Gln Asp Met Arg Val Leu Arg Gly Ala Ser
 245 250 255

Trp Ile Asp Thr Ala Asp Gly Ser Ala Asn His Arg Ala Arg Val Thr
 260 265 270

Thr Arg Met Gly Asn Thr Pro Asp Ser Ala Ser Asp Asn Leu Gly Phe
 275 280 285

Arg Cys Ala Ala Asp Ala Gly Arg Pro Pro Gly Glu Leu
 290 295 300

<210> 379

<211> 438

<212> PRT

<213> Homo sapiens

<400> 379

Met Pro Cys Thr Cys Thr Trp Arg Asn Trp Arg Gln Trp Ile Arg Pro
 1 5 10 15

Leu Val Ala Val Ile Tyr Leu Val Ser Ile Val Val Ala Val Pro Leu
 20 25 30

Cys Val Trp Glu Leu Gln Lys Leu Glu Val Gly Ile His Thr Lys Ala
 35 40 45

Trp Phe Ile Ala Gly Ile Phe Leu Leu Leu Thr Ile Pro Ile Ser Leu
 50 55 60

Trp Val Ile Leu Gln His Leu Val His Tyr Thr Gln Pro Glu Leu Gln
 65 70 75 80

Lys Pro Ile Ile Arg Ile Leu Trp Met Val Pro Ile Tyr Ser Leu Asp
 85 90 95

Ser Trp Ile Ala Leu Lys Tyr Pro Gly Ile Ala Ile Tyr Val Asp Thr
 100 105 110

Cys Arg Glu Cys Tyr Glu Ala Tyr Val Ile Tyr Asn Phe Met Gly Phe
 115 120 125

Leu Thr Asn Tyr Leu Thr Asn Arg Tyr Pro Asn Leu Val Leu Ile Leu
 130 135 140

Glu Ala Lys Asp Gln Gln Lys His Phe Pro Pro Leu Cys Cys Cys Pro
 145 150 155 160

Pro Trp Ala Met Gly Glu Val Leu Leu Phe Arg Cys Lys Leu Gly Val
 165 170 175

Leu Gln Tyr Thr Val Val Arg Pro Phe Thr Thr Ile Val Ala Leu Ile
 180 185 190

Cys Glu Leu Leu Gly Ile Tyr Asp Glu Gly Asn Phe Ser Phe Ser Asn
 195 200 205

Ala Trp Thr Tyr Leu Val Ile Ile Asn Asn Met Ser Gln Leu Phe Ala
 210 215 220

Met Tyr Cys Leu Leu Leu Phe Tyr Lys Val Leu Lys Glu Glu Leu Ser

225 230 235 240
 Pro Ile Gln Pro Val Gly Lys Phe Leu Cys Val Lys Leu Val Val Phe
 245 250 255
 Val Ser Phe Trp Gln Ala Val Val Ile Ala Leu Leu Val Lys Val Gly
 260 265 270
 Val Ile Ser Glu Lys His Thr Trp Glu Trp Gln Thr Val Glu Ala Val
 275 280 285
 Ala Thr Gly Leu Gln Asp Phe Ile Ile Cys Ile Glu Met Phe Leu Ala
 290 295 300
 Ala Ile Ala His His Tyr Thr Phe Ser Tyr Lys Pro Tyr Val Gln Glu
 305 310 315 320
 Ala Glu Glu Gly Ser Cys Phe Asp Ser Phe Leu Ala Met Trp Asp Val
 325 330 335
 Ser Asp Ile Arg Asp Asp Ile Ser Glu Gln Val Arg His Val Gly Arg
 340 345 350
 Thr Val Arg Gly His Pro Arg Lys Lys Leu Phe Pro Glu Asp Gln Asp
 355 360 365
 Gln Asn Glu His Thr Ser Leu Leu Ser Ser Ser Ser Gln Asp Ala Ile
 370 375 380
 Ser Ile Ala Ser Ser Met Pro Pro Ser Pro Met Gly His Tyr Gln Gly
 385 390 395 400
 Phe Gly His Thr Val Thr Pro Gln Thr Thr Pro Thr Thr Ala Lys Ile
 405 410 415
 Ser Asp Glu Ile Leu Ser Asp Thr Ile Gly Glu Lys Lys Glu Pro Ser
 420 425 430
 Asp Lys Ser Val Asp Ser
 435

<210> 380

<211> 107

<212> PRT

<213> Homo sapiens

<400> 380

Met Val Arg Tyr Thr Tyr Ser Met Leu Ser Val Ile Gly Ile Ser Tyr
 1 5 10 15
 Ala Val Leu Thr Trp Leu Ser Gln Thr Leu Trp Met Pro Ile Tyr Pro
 20 25 30
 Leu Cys Val Leu Ala Glu Ala Phe Ala Ile Tyr Gln Ser Leu Pro Tyr
 35 40 45
 Phe Glu Ser Phe Gly Thr Tyr Ser Thr Lys Leu Pro Phe Asp Leu Ser
 50 55 60

Ile Tyr Phe Pro Tyr Val Leu Lys Ile Tyr Leu Met Met Leu Phe Ile
 65 70 75 80

Gly Met Tyr Phe Thr Tyr Ser His Leu Tyr Ser Glu Arg Arg Asp Ile
 85 90 95

Leu Gly Ile Phe Pro Ile Lys Lys Lys Lys Met
 100 105

<210> 381

<211> 234

<212> PRT

<213> Homo sapiens

<400> 381

Met Arg Ile Arg Phe Thr Ser Pro His Pro Lys Asp Phe Pro Asp Glu
 1 5 10 15

Val Leu Gln Leu Ile His Glu Arg Asp Asn Ile Cys Lys Gln Ile His
 20 25 30

Leu Pro Ala Gln Ser Gly Ser Ser Arg Val Leu Glu Ala Met Arg Arg
 35 40 45

Gly Tyr Ser Arg Glu Ala Tyr Val Glu Leu Val His His Ile Arg Glu
 50 55 60

Ser Ile Pro Gly Val Ser Leu Ser Ser Asp Phe Ile Ala Gly Phe Cys
 65 70 75 80

Gly Glu Thr Glu Glu Asp His Val Gln Thr Val Ser Leu Leu Arg Glu
 85 90 95

Val Gln Tyr Asn Met Gly Phe Leu Phe Ala Tyr Ser Met Arg Gln Lys
 100 105 110

Thr Arg Ala Tyr His Arg Leu Lys Asp Asp Val Pro Glu Glu Val Lys
 115 120 125

Leu Arg Arg Leu Glu Glu Leu Ile Thr Ile Phe Arg Glu Glu Ala Thr
 130 135 140

Lys Ala Asn Gln Thr Ser Val Gly Cys Thr Gln Leu Val Leu Val Glu
 145 150 155 160

Gly Leu Ser Lys Arg Ser Ala Thr Asp Leu Cys Gly Arg Asn Asp Gly
 165 170 175

Asn Leu Lys Val Ile Phe Pro Asp Ala Glu Met Glu Asp Val Asn Asn
 180 185 190

Pro Gly Leu Arg Val Arg Ala Gln Pro Gly Asp Tyr Val Leu Val Lys
 195 200 205

Ile Thr Ser Ala Ser Ser Gln Thr Leu Arg Gly His Val Leu Cys Arg
 210 215 220

Thr Thr Leu Arg Asp Ser Ser Ala Tyr Cys
 225 230

<210> 382
 <211> 470
 <212> PRT
 <213> Homo sapiens

<400> 382

```

Met Trp Phe Thr Tyr Leu Leu Leu Tyr Leu His Ser Val Arg Ala Tyr
 1           5           10           15

Ser Ser Arg Gly Ala Gly Leu Leu Leu Leu Leu Gly Gln Val Ala Asp
          20           25           30

Gly Leu Cys Thr Pro Leu Val Gly Tyr Glu Ala Asp Arg Ala Ala Ser
          35           40           45

Cys Cys Ala Arg Tyr Gly Pro Arg Lys Ala Trp His Leu Val Gly Thr
          50           55           60

Val Cys Val Leu Leu Ser Phe Pro Phe Ile Phe Ser Pro Cys Leu Gly
          65           70           75           80

Cys Gly Ala Ala Thr Pro Glu Trp Ala Ala Leu Leu Tyr Tyr Gly Pro
          85           90           95

Phe Ile Val Ile Phe Gln Phe Gly Trp Ala Ser Thr Gln Ile Ser His
          100          105          110

Leu Ser Leu Ile Pro Glu Leu Val Thr Asn Asp His Glu Lys Val Glu
          115          120          125

Leu Thr Ala Leu Arg Tyr Ala Phe Thr Val Val Ala Asn Ile Thr Val
          130          135          140

Tyr Gly Ala Ala Trp Leu Leu Leu His Leu Gln Gly Ser Ser Arg Val
          145          150          155          160

Glu Pro Thr Gln Asp Ile Ser Ile Ser Asp Gln Leu Gly Gly Gln Asp
          165          170          175

Val Pro Val Phe Arg Asn Leu Ser Leu Leu Val Val Gly Val Gly Ala
          180          185          190

Val Phe Ser Leu Leu Phe His Leu Gly Thr Arg Glu Arg Arg Arg Pro
          195          200          205

His Ala Glu Glu Pro Gly Glu His Thr Pro Leu Leu Ala Pro Ala Thr
          210          215          220

Ala Gln Pro Leu Leu Leu Trp Lys His Trp Leu Arg Glu Pro Ala Phe
          225          230          235          240

Tyr Gln Val Gly Ile Leu Tyr Met Thr Thr Arg Leu Ile Val Asn Leu
          245          250          255

Ser Gln Thr Tyr Met Ala Met Tyr Leu Thr Tyr Ser Leu His Leu Pro
          260          265          270

Lys Lys Phe Ile Ala Thr Ile Pro Leu Val Met Tyr Leu Ser Gly Phe

```


275 280 285
 Leu Ser Ser Phe Leu Met Lys Pro Ile Asn Lys Cys Ile Gly Arg Asn
 290 295 300
 Met Thr Tyr Phe Ser Gly Leu Leu Val Ile Leu Ala Phe Ala Ala Trp
 305 310 315 320
 Val Ala Leu Ala Glu Gly Leu Gly Val Ala Val Tyr Ala Ala Ala Val
 325 330 335
 Leu Leu Gly Ala Gly Cys Ala Thr Ile Leu Val Thr Ser Leu Ala Met
 340 345 350
 Thr Ala Asp Leu Ile Gly Pro His Thr Asn Ser Gly Ala Phe Val Tyr
 355 360 365
 Gly Ser Met Ser Phe Leu Asp Lys Val Ala Asn Gly Leu Ala Val Met
 370 375 380
 Ala Ile Gln Ser Leu His Pro Cys Pro Ser Glu Leu Cys Cys Arg Ala
 385 390 395 400
 Cys Val Ser Phe Tyr His Trp Ala Met Val Ala Val Thr Gly Gly Val
 405 410 415
 Gly Val Ala Ala Ala Leu Cys Leu Cys Ser Leu Leu Leu Trp Pro Thr
 420 425 430
 Arg Leu Arg Arg Ser Arg Gly Gly Glu His Arg Thr Pro Ser Glu Gly
 435 440 445
 Glu Gly Ile Ser Thr Ala Pro Pro Pro Cys Trp Asn Glu Thr Gln Pro
 450 455 460
 Gln Gly Gly Ala Lys Leu
 465 470

<210> 383

<211> 260

<212> PRT

<213> Homo sapiens

<400> 383

Met Ala Gly Ser Pro Leu Leu Trp Gly Pro Arg Ala Gly Gly Val Gly
 1 5 10 15
 Leu Leu Val Leu Leu Leu Leu Gly Leu Phe Arg Pro Pro Pro Ala Leu
 20 25 30
 Cys Ala Arg Pro Val Lys Glu Pro Arg Gly Leu Ser Ala Ala Ser Pro
 35 40 45
 Pro Leu Ala Glu Thr Gly Ala Pro Arg Arg Phe Arg Arg Ser Val Pro
 50 55 60
 Arg Gly Glu Ala Ala Gly Ala Val Gln Asp Leu Ala Arg Ala Leu Ala
 65 70 75 80

His Leu Leu Glu Ala Glu Arg Gln Glu Arg Ala Arg Ala Glu Ala Gln
 85 90 95
 Glu Ala Glu Asp Gln Gln Ala Arg Val Leu Ala Gln Leu Leu Arg Val
 100 105 110
 Trp Gly Ala Pro Arg Asn Ser Asp Pro Ala Leu Gly Leu Asp Asp Asp
 115 120 125
 Pro Asp Ala Pro Ala Ala Gln Leu Ala Arg Ala Leu Leu Arg Ala Arg
 130 135 140
 Leu Asp Pro Ala Ala Leu Ala Ala Gln Leu Val Pro Ala Pro Val Pro
 145 150 155 160
 Ala Ala Ala Leu Arg Pro Arg Pro Pro Val Tyr Asp Asp Gly Pro Ala
 165 170 175
 Gly Pro Asp Ala Glu Glu Ala Gly Asp Glu Thr Pro Asp Val Asp Pro
 180 185 190
 Glu Leu Leu Arg Tyr Leu Leu Gly Arg Ile Leu Ala Gly Ser Ala Asp
 195 200 205
 Ser Glu Gly Val Ala Ala Pro Arg Arg Leu Arg Arg Ala Ala Asp His
 210 215 220
 Asp Val Gly Ser Glu Leu Pro Pro Glu Gly Val Leu Gly Ala Leu Leu
 225 230 235 240
 Arg Val Lys Arg Leu Glu Thr Pro Ala Pro Gln Val Pro Ala Arg Arg
 245 250 255
 Leu Leu Pro Pro
 260

<210> 384

<211> 95

<212> PRT

<213> Homo sapiens

<400> 384

Met His Leu Cys Ile Cys Ala Val Trp Val Leu Val Ala Leu Leu Arg
 1 5 10 15
 Met His Gly Ala Ser Pro Ala Gln Thr Ser Gly Thr Arg Ser Gly Asn
 20 25 30
 Gly Gly Cys Arg Arg His Gly Ala Gly Gln Gly Arg Gly Ala Ala Thr
 35 40 45
 Gln Pro Leu Arg Pro Pro Arg Gly Thr Ala Ser Gly Gln Leu Met Ala
 50 55 60
 Leu Leu Ser Ala Leu Leu Pro Arg Leu Ser Gly Ser Ser Thr Pro Met
 65 70 75 80
 Met Ala His Gly Arg Pro Ala Pro Pro Gln Trp Ser Arg Val Ser
 85 90 95

<210> 385
 <211> 130
 <212> PRT
 <213> Homo sapiens

<400> 385
 Met Glu Thr Leu Gly Ala Leu Leu Val Leu Glu Phe Leu Leu Leu Ser
 1 5 10 15
 Pro Val Glu Ala Gln Gln Ala Thr Glu His Arg Leu Lys Pro Trp Leu
 20 25 30
 Val Gly Leu Ala Ala Val Val Gly Phe Leu Phe Ile Val Tyr Leu Val
 35 40 45
 Leu Leu Ala Asn Arg Leu Trp Cys Ser Lys Ala Arg Ala Glu Asp Glu
 50 55 60
 Glu Glu Thr Thr Phe Arg Met Glu Ser Asn Leu Tyr Gln Asp Gln Ser
 65 70 75 80
 Glu Asp Lys Arg Glu Lys Lys Glu Ala Lys Glu Lys Glu Glu Lys Arg
 85 90 95
 Lys Lys Glu Lys Lys Thr Ala Lys Glu Gly Glu Ser Asn Leu Gly Leu
 100 105 110
 Asp Leu Glu Glu Lys Glu Pro Gly Asp His Glu Arg Ala Lys Ser Thr
 115 120 125
 Val Met
 130

<210> 386
 <211> 41
 <212> PRT
 <213> Homo sapiens

<400> 386
 Met Asn Leu Ser Phe Leu Ser Phe Phe Leu Phe Phe Tyr Leu Leu Trp
 1 5 10 15
 Ser Pro Ala Glu Ser Val Tyr Lys Lys Gly Met Val Lys Lys Asn Leu
 20 25 30
 Ser His Ser Ile Val Glu Lys Ile Lys
 35 40

<210> 387
 <211> 113
 <212> PRT
 <213> Homo sapiens

<220>

<221> SITE

<222> (38)

<223> Xaa equals any amino acid

<400> 387

```

Met Arg Pro Leu Leu Leu Gly Gly Tyr Trp Val Leu Cys Leu Ser Val
 1           5           10           15

Leu Gly His Ala Ala Leu Tyr His Phe Trp Leu Arg Glu Glu Gly Lys
           20           25           30

Gly Pro Pro Gln Val Xaa Ser Val Leu Ala Leu Ala Leu Pro Ala Gly
           35           40           45

Ser Cys Ala Pro Gly Leu Pro Phe Pro Gly Pro Leu Ile Pro Thr Gln
           50           55           60

Leu Leu Phe Ala Leu Glu Trp Gly Thr Pro Thr Pro Leu Arg Asp His
65           70           75           80

Pro Pro His Ser Met His Ser Ala Pro Gln Asn Pro Pro Val Phe Leu
           85           90           95

Gly Thr His Thr Cys Pro Pro Ser Trp Tyr Phe Arg Leu Ile Pro Gln
           100           105           110

Ala

```

<210> 388

<211> 161

<212> PRT

<213> Homo sapiens

<400> 388

```

Met Ala Leu Ser Leu Thr Leu Cys Phe Val Met Phe Trp Thr Pro Asn
 1           5           10           15

Val Ser Glu Lys Ile Leu Ile Asp Ile Ile Gly Val Asp Phe Ala Phe
           20           25           30

Ala Glu Leu Cys Val Val Pro Leu Arg Ile Phe Ser Phe Phe Pro Val
           35           40           45

Pro Val Thr Val Arg Ala His Leu Thr Gly Trp Leu Met Thr Leu Lys
           50           55           60

Lys Thr Phe Val Leu Ala Pro Ser Ser Val Leu Arg Ile Ile Val Leu
65           70           75           80

Ile Ala Ser Leu Val Val Leu Pro Tyr Leu Gly Val His Gly Ala Thr
           85           90           95

Leu Gly Val Gly Ser Leu Leu Ala Gly Phe Val Gly Glu Ser Thr Met
           100           105           110

Val Ala Ile Ala Ala Cys Tyr Val Tyr Arg Lys Gln Lys Lys Lys Met
           115           120           125

```

Glu Asn Glu Ser Ala Thr Glu Gly Glu Asp Ser Ala Met Thr Asp Met
 130 135 140

Pro Pro Thr Glu Glu Val Thr Asp Ile Val Glu Met Arg Glu Glu Asn
 145 150 155 160

Glu

<210> 389
 <211> 348
 <212> PRT
 <213> Homo sapiens

<400> 389
 Met Asn Met Thr Gln Ala Arg Val Leu Val Ala Ala Val Val Gly Leu
 1 5 10 15

Val Ala Val Leu Leu Tyr Ala Ser Ile His Lys Ile Glu Glu Gly His
 20 25 30

Leu Ala Val Tyr Tyr Arg Gly Gly Ala Leu Leu Thr Ser Pro Ser Gly
 35 40 45

Pro Gly Tyr His Ile Met Leu Pro Phe Ile Thr Thr Phe Arg Ser Val
 50 55 60

Gln Thr Thr Leu Gln Thr Asp Glu Val Lys Asn Val Pro Cys Gly Thr
 65 70 75 80

Ser Gly Gly Val Met Ile Tyr Ile Asp Arg Ile Glu Val Val Asn Met
 85 90 95

Leu Ala Pro Tyr Ala Val Phe Asp Ile Val Arg Asn Tyr Thr Ala Asp
 100 105 110

Tyr Asp Lys Thr Leu Ile Phe Asn Lys Ile His His Glu Leu Asn Gln
 115 120 125

Phe Cys Ser Ala His Thr Leu Gln Glu Val Tyr Ile Glu Leu Phe Asp
 130 135 140

Gln Ile Asp Glu Asn Leu Lys Gln Ala Leu Gln Lys Asp Leu Asn Leu
 145 150 155 160

Met Ala Pro Gly Leu Thr Ile Gln Ala Val Arg Val Thr Lys Pro Lys
 165 170 175

Ile Pro Glu Ala Ile Arg Arg Asn Phe Glu Leu Met Glu Ala Glu Lys
 180 185 190

Thr Lys Leu Leu Ile Ala Ala Gln Lys Gln Lys Val Val Glu Lys Glu
 195 200 205

Ala Glu Thr Glu Arg Lys Lys Ala Val Ile Glu Ala Glu Lys Ile Ala
 210 215 220

Gln Val Ala Lys Ile Arg Phe Gln Gln Lys Val Met Glu Lys Glu Thr
 225 230 235 240

```

<400> 391
Met  Pro  Gly  Ile  Leu  Ala  Gly  Ile  Pro  Val  Lys  Asp  Leu  Cys  Leu  Ser
  1          5          10          15

Leu  Leu  Gln  Gly  Phe  Arg  Leu  Leu  Leu  Leu  Cys  Val  Cys  Pro  Gly  Trp
          20          25          30

Leu  Ser  Gly  Trp  Met  Gly  Gly  Gln  Lys  Gly  Ser  Pro  Arg  Ile  Val  Asp
          35          40          45

Ile  Gly
    50

```

<210> 392
 <211> 206
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (143)
 <223> Xaa equals any amino acid

<400> 392
 Met Ala Ser His Gly Leu Cys Pro Cys Leu Leu Met Gly Thr Gly Trp
 1 5 10 15
 Gly Leu Trp Thr Leu Leu Pro Asp Leu Glu Val Met Ala Gly Lys Gly
 20 25 30
 Arg Met Pro Phe Ala Gly Ile Ser Val Thr Ser Gly Phe Leu Arg Ser
 35 40 45
 Leu Lys Arg Ala Pro Leu Pro His Thr Gly Ser Pro Asp Pro Arg Pro
 50 55 60
 Ser Gly Ile Trp Ser Gly Val Arg Thr Thr Ser Glu Glu Ala Gly Ala
 65 70 75 80
 Thr Ser Thr Gln Ile Ser Thr Ala Ala Pro Arg Phe His Ser Arg Arg
 85 90 95
 Lys Gly Pro Lys Arg Asn Leu Ala Pro Gln Leu Arg Val Leu Val His
 100 105 110
 Arg Thr Val Pro Pro Gly Gln Leu Val Tyr Ala Pro Gln Thr Val Asp
 115 120 125
 Ser Leu Arg Gly Thr Leu Leu Arg Pro Pro Ala Trp Leu Leu Xaa Gln
 130 135 140
 Val Pro Cys Phe Tyr Ser Gly Gln Pro Leu Leu Val Ser Ala Ser Val
 145 150 155 160
 Leu Cys Arg Asp Leu Met Gln Phe Leu Phe Leu Leu Lys Ser Tyr Leu
 165 170 175
 Leu Pro Phe Leu Glu Val Cys Arg Ile Gly Trp Glu Gln Ile Gln Arg
 180 185 190
 Ile Leu Gly Ala Gly Leu Trp Arg Gln Lys Glu Gly Asn Gly
 195 200 205

<210> 393
 <211> 75
 <212> PRT
 <213> Homo sapiens

<400> 393
 Met Ser Arg Phe Ile Leu Asn His Leu Val Leu Ala Ile Pro Leu Arg
 1 5 10 15

Val Leu Val Val Leu Trp Ala Phe Val Leu Gly Leu Ser Arg Val Met
 20 25 30

Leu Gly Arg His Asn Val Thr Asp Val Ala Phe Gly Phe Phe Leu Gly
 35 40 45

Tyr Met Gln Tyr Ser Ile Val Asp Tyr Cys Trp Leu Ser Pro His Asn
 50 55 60

Ala Pro Val Leu Phe Leu Leu Trp Ser Gln Arg
 65 70 75

<210> 394

<211> 97

<212> PRT

<213> Homo sapiens

<400> 394

Met Cys Lys Gly Leu Lys Asn Pro Glu Gly Leu Leu Leu Leu Leu Leu
 1 5 10 15

Leu Leu Leu Phe Thr Asp Thr Ser Asn Ser His Cys Leu Pro Pro Tyr
 20 25 30

Leu Ser Cys Phe Leu His Glu Arg Gln Pro Glu Leu Gln Ser Val Cys
 35 40 45

Ile Ser Ala Ala Tyr Val Leu Ala Thr Pro Pro Glu Pro Ser Phe Ile
 50 55 60

Leu Val Gly Phe Ser Glu Ala Gly Phe Ala Gln Val Ala Cys Phe Leu
 65 70 75 80

Lys Tyr Leu Phe Cys Arg Pro Phe Thr Arg His Gly Tyr Phe Tyr Ser
 85 90 95

Gly

<210> 395

<211> 187

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (167)

<223> Xaa equals any amino acid

<400> 395

Met Gly Phe Phe Leu Val Leu Val Met Glu Gln Ile Thr Leu Ala Tyr
 1 5 10 15

Lys Glu Gln Ser Gly Pro Ser Pro Leu Glu Glu Thr Arg Ala Leu Leu
 20 25 30

Gly Thr Val Asn Gly Gly Pro Gln His Trp His Asp Gly Pro Gly Val

35	40	45
Pro Gln Ala Ser Gly Ala	Pro Ala Thr Pro Ser	Ala Leu Arg Ala Cys
50	55	60
Val Leu Val Phe Ser Leu	Ala Leu His Ser Val	Phe Glu Gly Leu Ala
65	70	75 80
Val Gly Leu Gln Arg Asp	Arg Ala Arg Ala Met	Glu Leu Cys Leu Ala
85	90	95
Leu Leu Leu His Lys Gly	Ile Leu Ala Val Ser	Leu Ser Leu Arg Leu
100	105	110
Leu Gln Ser His Leu Arg	Ala Gln Val Val Ala	Gly Cys Gly Ile Leu
115	120	125
Phe Ser Cys Met Thr Pro	Leu Gly Ile Gly Leu	Gly Ala Ala Leu Ala
130	135	140
Glu Ser Ala Gly Pro Leu	His Gln Leu Ala Gln	Ser Val Leu Glu Gly
145	150	155 160
Met Ala Ala Gly Thr Phe	Xaa Tyr Ile Thr Phe	Leu Glu Ile Leu Leu
165	170	175
Phe His Pro Lys Phe Lys	Gly Val Ser Arg Arg	
180	185	

<210> 396

<211> 46

<212> PRT

<213> Homo sapiens

<400> 396

Met Thr Leu Ser Leu Gln	Leu Ala Glu Leu Val	His Phe Val Cys Ala
1	5	10 15
Phe Gln Ser Gln Trp Thr	Gly Val Tyr Pro Met	Met Pro Pro Leu Lys
20	25	30
Pro Thr Glu Pro Leu Cys	Phe Ala Cys Val Pro	Cys Arg Val
35	40	45

<210> 397

<211> 152

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (66)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (77)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (81)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (84)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (86)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (87)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (93)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (103)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (110)

<223> Xaa equals any amino acid

<400> 397

Met Asp His Ser Pro Thr Thr Gly Val Val Thr Val Ile Val Ile Leu
1 5 10 15

Ile Ala Ile Ala Ala Leu Gly Ala Phe Asp Pro Gly Leu Leu Val Leu
20 25 30

Pro Ala Ala Ala Ala His Gln Pro Val Arg Gly Arg Gly Glu His Arg
35 40 45

Gly Gly Trp Gly Asp Gln Gly Thr Leu Pro Ala Gly Ala Val Phe Gly
50 55 60

Gln Xaa Thr Val Arg Gly Glu Lys Gly Gln Ala Asp Xaa Ser Gln Thr
65 70 75 80

Xaa Arg Lys Xaa Thr Xaa Xaa Pro Gly Cys Lys Gly Xaa Leu Val Pro
85 90 95

Val Cys Lys Pro Ala Lys Xaa Gly Leu Gly Gly Ala Lys Xaa Ile Arg
100 105 110

Met Arg Cys Cys Leu Arg Gly Arg Ala Asp Thr Cys Trp His Gly Leu
115 120 125

Cys Gly Phe Arg Pro Ser His Ala Leu Met Pro Gly Asp Leu Ala Val
 130 135 140

Leu Gly Phe Pro Ser Ala Ser Arg
 145 150

<210> 398

<211> 340

<212> PRT

<213> Homo sapiens

<400> 398

Met Ala Leu Arg Leu Leu Arg Arg Ala Ala Arg Gly Ala Ala Ala Ala
 1 5 10 15

Ala Leu Leu Arg Leu Lys Ala Ser Leu Ala Ala Asp Ile Pro Arg Leu
 20 25 30

Gly Tyr Ser Ser Ser Ser His His Lys Tyr Ile Pro Arg Arg Ala Val
 35 40 45

Leu Tyr Val Pro Gly Asn Asp Glu Lys Lys Ile Lys Lys Ile Pro Ser
 50 55 60

Leu Asn Val Asp Cys Ala Val Leu Asp Cys Glu Asp Gly Val Ala Ala
 65 70 75 80

Asn Lys Lys Asn Glu Ala Arg Leu Arg Ile Val Lys Thr Leu Glu Asp
 85 90 95

Ile Asp Leu Gly Pro Thr Glu Lys Cys Val Arg Val Asn Ser Val Ser
 100 105 110

Ser Gly Leu Ala Glu Glu Asp Leu Glu Thr Leu Leu Gln Ser Arg Val
 115 120 125

Leu Pro Ser Ser Leu Met Leu Pro Lys Val Glu Ser Pro Glu Glu Ile
 130 135 140

Gln Trp Phe Ala Asp Lys Phe Ser Phe His Leu Lys Gly Arg Lys Leu
 145 150 155 160

Glu Gln Pro Met Asn Leu Ile Pro Phe Val Glu Thr Ala Met Gly Leu
 165 170 175

Leu Asn Phe Lys Ala Val Cys Glu Glu Thr Leu Lys Val Gly Pro Gln
 180 185 190

Val Gly Leu Phe Leu Asp Ala Val Val Phe Gly Gly Glu Asp Phe Arg
 195 200 205

Ala Ser Ile Gly Ala Thr Ser Ser Lys Glu Thr Leu Asp Ile Leu Tyr
 210 215 220

Ala Arg Gln Lys Ile Val Val Ile Ala Lys Ala Phe Gly Leu Gln Ala
 225 230 235 240

Val Asp Leu Val Tyr Ile Asp Phe Arg Asp Gly Ala Gly Leu Leu Arg

```
<210> 399
<211> 64
<212> PRT
<213> Homo sapiens
```

<400> 399

Met	Val	Arg	His	Ile	Arg	Glu	Arg	Arg	Arg	Gln	Pro	Leu	Ala	Phe	Gln
1				5					10					15	
Arg	Val	Leu	Leu	Ser	Leu	Cys	Leu	Leu	Glu	Gly	Ile	Trp	His	Ser	Pro
			20					25					30		
Ala	Ala	Ala	Ala	Gly	Gly	Gly	Ser	His	Cys	Ser	Ser	Trp	Pro	Ser	Leu
			35				40					45			
Tyr	Thr	Thr	Phe	Gln	Arg	Val	Ser	Leu	Leu	Glu	Leu	Asp	Leu	Gly	Leu
	50					55				60					

```
<210> 400
<211> 44
<212> PRT
<213> Homo sapiens
```

```
<220>  
<221> SITE  
<222> (16)  
<223> Xaa equals any amino acid
```

<400> 400

Met	Cys	Leu	Pro	Leu	Leu	His	Cys	Thr	Gly	Ala	Leu	Trp	Gly	Lys	Xaa
1				5					10					15	
Val	Leu	Leu	Phe	Leu	Tyr	Cys	Leu	Ala	Gln	Ser	Phe	Ala	Tyr	Ser	Arg
			20					25					30		

His Gln Thr Val Gly Leu Val Val His Asp Tyr Trp
 35 40

<210> 401

<211> 221

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (184)

<223> Xaa equals any amino acid

<400> 401

Met Ala Gly Gly Val Arg Pro Leu Arg Gly Leu Arg Ala Leu Cys Arg
 1 5 10 15

Val Leu Leu Phe Leu Ser Gln Phe Cys Ile Leu Ser Gly Gly Glu Ser
 20 25 30

Thr Glu Ile Pro Pro Tyr Val Met Lys Cys Pro Ser Asn Gly Leu Cys
 35 40 45

Ser Arg Leu Pro Ala Asp Cys Ile Asp Cys Thr Thr Asn Phe Ser Cys
 50 55 60

Thr Tyr Gly Lys Pro Val Thr Phe Asp Cys Ala Val Lys Pro Ser Val
 65 70 75 80

Thr Cys Val Asp Gln Asp Phe Lys Ser Gln Lys Asn Phe Ile Ile Asn
 85 90 95

Met Thr Cys Arg Phe Cys Trp Gln Leu Pro Glu Thr Asp Tyr Glu Cys
 100 105 110

Thr Asn Ser Thr Ser Cys Met Thr Val Ser Cys Pro Arg Gln Arg Tyr
 115 120 125

Pro Ala Asn Cys Thr Val Arg Asp His Val His Cys Leu Gly Asn Arg
 130 135 140

Thr Phe Pro Lys Met Leu Tyr Cys Asn Trp Thr Gly Gly Tyr Lys Trp
 145 150 155 160

Ser Thr Ala Leu Ala Leu Ser Ile Thr Leu Gly Gly Phe Gly Ala Asp
 165 170 175

Arg Phe Tyr Leu Gly Gln Trp Xaa Glu Gly Leu Gly Lys Leu Phe Ser
 180 185 190

Phe Gly Gly Leu Gly Ile Trp Thr Leu Ile Asp Val Leu Leu Ile Gly
 195 200 205

Val Gly Tyr Val Gly Pro Ala Asp Gly Ser Leu Tyr Ile
 210 215 220

<210> 402

<211> 39

<212> PRT

<213> Homo sapiens

<400> 402

Met Trp Leu Thr Gln Pro Glu Ser Leu Ser Leu Cys Val Ser Val Ser
 1 5 10 15

Gln Asp Trp Ala His Ile Leu Ala Leu Ser Ile Thr Met Leu Trp Asp
 20 25 30

Phe Arg Glu Phe Pro His Leu
 35

<210> 403

<211> 62

<212> PRT

<213> Homo sapiens

<400> 403

Met Glu Asn Val Cys Gln Ala Gly Phe Pro Ser Leu Leu His Leu Asn
 1 5 10 15

Ile Thr Leu Thr Leu Leu Gly Leu Ala Gln Cys Tyr Leu Ala Asn Phe
 20 25 30

Ser Ser Cys Arg Glu Gly Ser Glu His Tyr Leu Phe Phe Phe Phe
 35 40 45

Leu Leu Glu Pro Gly Leu His Lys Ala Met Ala Lys Phe Ser
 50 55 60

<210> 404

<211> 64

<212> PRT

<213> Homo sapiens

<400> 404

Met Val Ser Pro Leu Ile Ser Ala Leu Phe His Val Pro Phe Leu Trp
 1 5 10 15

Leu Gly Met Phe Phe Pro His Ser Leu Ser Gly Pro Phe Pro Ser His
 20 25 30

Leu Arg Arg Ala Ser Ser Ser Arg Lys Pro Leu Val Lys Pro Pro Arg
 35 40 45

Ala Arg Gln Tyr Pro Pro Leu Ala Ser Ser Gly Tyr Arg Gly Arg Ile
 50 55 60

<210> 405

<211> 62
 <212> PRT
 <213> Homo sapiens

<400> 405
 Met Lys Asn Ser Thr Ser Leu Leu Tyr Lys Leu Phe Ser Ser Leu Ser
 1 5 10 15
 Val Phe Ile Phe Lys Phe Leu Leu Leu Phe Tyr Thr Leu His Ile Ala
 20 25 30
 Leu Gly Val Lys Ile Gln Tyr Lys Pro Leu Ala His Phe Ile Asp His
 35 40 45
 Ser Cys Ile Gln Gln Val Ser Gln Val Gln Trp Ser Ile Pro
 50 55 60

<210> 406
 <211> 139
 <212> PRT
 <213> Homo sapiens

<400> 406
 Met Ala Leu Gly Ile Gln Lys Arg Phe Ser Pro Glu Val Leu Gly Leu
 1 5 10 15
 Cys Ala Ser Thr Ala Leu Val Trp Val Val Met Glu Val Leu Ala Leu
 20 25 30
 Leu Leu Gly Leu Tyr Leu Ala Thr Val Arg Ser Asp Leu Ser Thr Phe
 35 40 45
 His Leu Leu Ala Tyr Ser Gly Tyr Lys Tyr Val Gly Met Ile Leu Ser
 50 55 60
 Val Leu Thr Gly Leu Leu Phe Gly Ser Asp Gly Tyr Tyr Val Ala Leu
 65 70 75 80
 Ala Trp Thr Ser Ser Ala Leu Met Tyr Phe Ile Val Arg Ser Leu Arg
 85 90 95
 Thr Ala Ala Leu Gly Pro Asp Ser Met Gly Gly Pro Val Pro Arg Gln
 100 105 110
 Arg Leu Gln Leu Tyr Leu Thr Leu Gly Ala Ala Ala Phe Gln Pro Leu
 115 120 125
 Ile Ile Tyr Trp Leu Thr Phe His Leu Val Arg
 130 135

<210> 407
 <211> 42
 <212> PRT
 <213> Homo sapiens

<400> 407
 Met Arg Lys Glu Glu Gly Ile Ala His Leu Ser Ile Ala Phe Phe Val

1 5 10 15
 Gln Val Leu Cys Leu Tyr Gln Leu Leu Pro Val Ile Leu Pro Gln Phe
 20 25 30
 Asn Leu Gly Ser Gly Lys Asn Met Asn Arg
 35 40

<210> 408
 <211> 121
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (30)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (32)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (87)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (101)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (115)
 <223> Xaa equals any amino acid

<400> 408
 Met Cys Ser His Ser Thr Leu Ile His Leu Tyr Leu Val Leu Pro Phe
 1 5 10 15
 Phe Phe Leu Phe Leu Pro Ser Ser Phe Pro Phe Pro Ser Xaa Ser Xaa
 20 25 30
 Ser Ser Ile Leu Pro Ser Leu Arg Leu Pro Pro Phe Phe Pro Pro Ser
 35 40 45
 Leu Phe Leu His Ser Ser Leu Pro Pro Ser Leu Ser His Pro Leu Gly
 50 55 60
 Leu Ser Ile Thr Ser Ser Arg Gln Ser Phe Leu Asp Tyr His His Leu
 65 70 75 80
 Cys Thr Lys His Leu Ser Xaa Thr Leu Cys Gly Leu Ile Tyr His Cys
 85 90 95
 Leu Asn Ile Phe Xaa Thr Arg Ala Val Met Trp His Met Gln Val Ser
 100 105 110

Phe Leu Xaa Ile His Trp Leu Leu Pro
 115 120

<210> 409
 <211> 71
 <212> PRT
 <213> Homo sapiens

<400> 409
 Met Arg Ile His Phe Lys Ile Leu Val Leu Val Ile Tyr Phe Ile Leu
 1 5 10 15
 Leu Gly Ser Phe Ser Asp Arg Cys Ser Leu Leu Asp Cys Lys Ser Arg
 20 25 30
 Ile Gln Arg Ile Phe Ile Cys Asn Ile Leu Asn Leu Ser Leu Val Ser
 35 40 45
 Cys His Leu Cys Arg Tyr Ser Phe Asp Cys Leu Thr Arg Gly Lys Cys
 50 55 60
 Phe Pro Leu Ser Phe Pro Ala
 65 70

<210> 410
 <211> 68
 <212> PRT
 <213> Homo sapiens

<400> 410
 Met Leu Met Leu Leu Thr Leu Leu Val Leu Gly Met Val Trp Val Ala
 1 5 10 15
 Ser Ala Ile Val Asp Lys Asn Lys Ala Asn Arg Glu Ser Leu Tyr Asp
 20 25 30
 Phe Trp Glu Tyr Tyr Leu Pro Tyr Leu Tyr Ser Cys Ile Ser Phe Leu
 35 40 45
 Gly Val Leu Leu Leu Leu Ala Ala Gly Arg Pro Gly Gly Ala Ala Val
 50 55 60
 Leu Leu Ser Leu
 65

<210> 411
 <211> 233
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (173)
 <223> Xaa equals any amino acid

<400> 411

```

Met His Arg Gly Lys Leu Asp Cys Ala Gly Gly Ala Leu Leu Ser Ser
 1           5           10           15

Tyr Leu Ile Val Leu Met Ile Leu Leu Ala Val Val Ile Cys Thr Val
      20           25           30

Ser Ala Ile Met Cys Val Ser Met Arg Gly Thr Ile Cys Asn Pro Gly
      35           40           45

Pro Arg Lys Ser Met Ser Lys Leu Leu Tyr Ile Arg Leu Ala Leu Phe
      50           55           60

Phe Pro Glu Met Val Trp Ala Ser Leu Gly Ala Ala Trp Val Ala Asp
      65           70           75           80

Gly Val Gln Cys Asp Arg Thr Val Val Asn Gly Ile Ile Ala Thr Val
      85           90           95

Val Val Ser Trp Ile Ile Ile Ala Ala Thr Val Val Ser Ile Ile Ile
      100          105          110

Val Phe Asp Pro Leu Gly Gly Lys Met Ala Pro Tyr Ser Ser Ala Gly
      115          120          125

Pro Ser His Leu Asp Ser His Asp Ser Ser Gln Leu Leu Asn Gly Leu
      130          135          140

Lys Thr Ala Ala Thr Ser Val Trp Glu Thr Arg Ile Lys Leu Leu Cys
      145          150          155          160

Cys Cys Ile Gly Lys Asp Asp His Thr Arg Val Ala Xaa Ser Ser Thr
      165          170          175

Ala Glu Leu Phe Ser Thr Tyr Phe Ser Asp Thr Asp Leu Val Pro Ser
      180          185          190

Asp Ile Ala Ala Gly Leu Ala Leu Leu His Gln Gln Gln Asp Asn Ile
      195          200          205

Arg Asn Asn Gln Asp Leu Pro Arg Trp Ser Ala Met Pro Gln Gly Ala
      210          215          220

Pro Arg Lys Leu Ile Trp Met Gln Asn
      225          230

```

<210> 412

<211> 66

<212> PRT

<213> Homo sapiens

<400> 412

```

Met Phe Val Glu Arg Trp Leu Pro Cys Phe Leu Val Val Ala Val Val
 1           5           10           15

Val Trp Val Phe Ala Cys Gly Pro Val Glu Asp Lys Glu Asp Ser Phe
      20           25           30

```

Gly Trp Ser Ser Tyr Phe Leu Ala Ser Gly Leu Pro Pro Leu Leu Phe
 35 40 45

Glu Ala Ser Gln Thr Arg Thr Val Arg Ala Gly Arg Leu Gly Val Phe
 50 55 60

Val Cys
 65

<210> 413
 <211> 90
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (29)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (30)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (65)
 <223> Xaa equals any amino acid

<400> 413
 Met Leu Arg Cys Ser Phe Ser Ser Phe Leu Leu Cys His Thr Ile Leu
 1 5 10 15

Leu Phe Leu Gly Ser Ser Ala His Leu Leu Val Glu Xaa Xaa Val Trp
 20 25 30

Gly Leu Tyr Glu Tyr Arg Ile Gly Asp Met Val Asp Gln Lys Ala Thr
 35 40 45

Phe Cys Val Gln Lys Gln Glu Cys Leu Phe Pro Leu Gly Ser Trp Val
 50 55 60

Xaa Arg Val Glu Gly Gly Ala Phe Ala Arg Glu Pro Pro Ser Ser Thr
 65 70 75 80

Gln Tyr Phe Pro Val Ser Cys Leu Tyr Gln
 85 90

<210> 414
 <211> 36
 <212> PRT
 <213> Homo sapiens

<400> 414
 Met Gly Cys Thr Ala Leu Leu Leu Leu Phe His Leu Cys Val Pro Cys
 1 5 10 15

Glu Pro Tyr Gly Thr His Glu Lys Glu Leu Val Pro Gly Leu Tyr Phe
 20 25 30

Leu Val Tyr Arg
 35

<210> 415
 <211> 46
 <212> PRT
 <213> Homo sapiens

<400> 415
 Met Cys Ile Pro Glu Ala Leu Gly Lys Asn Ser Leu Phe Leu Ser Ser
 1 5 10 15
 Thr Phe Leu Trp Leu Leu Ala Phe Phe Gly Leu Trp Ser His His Ser
 20 25 30
 Tyr Leu Glu Gly Gln His Leu Gln Ile Cys Phe Phe Phe Thr
 35 40 45

<210> 416
 <211> 82
 <212> PRT
 <213> Homo sapiens

<400> 416
 Met Ala Ile Ser Cys Trp Ala Ser Leu Thr Val Lys Ser Leu Tyr Cys
 1 5 10 15
 Leu Leu Gly Phe Trp Trp Glu Ala Val Ile Ser Ser Asn Glu Leu Pro
 20 25 30
 Leu Pro Trp Ile Cys Gln Glu Ala Asp Gly Asn Leu Ala Asn Ser Gly
 35 40 45
 Arg Tyr Gln Ala Pro Ser Ser Ala Pro Val Thr Leu Phe Tyr Thr Cys
 50 55 60
 Gly Ser Thr Thr Val Cys Ser Glu Gly Gln Ser Leu Pro Leu Leu Cys
 65 70 75 80
 Phe Ser

<210> 417
 <211> 57
 <212> PRT
 <213> Homo sapiens

<400> 417
 Met Pro Pro His Arg Gln Thr Asp Gly Gln Met Gly Leu Pro Ala Pro
 1 5 10 15
 Ala Leu Trp Val Trp Gly Leu Leu Leu Ser Ser Ser Phe Gln Thr Leu

20 25 30
 Leu Pro Ala Phe Pro Lys Pro Pro Ala Leu Asn Leu Gly Cys Ser Thr
 35 40 45
 Arg Pro Ile Pro Ser Phe Leu Lys Ile
 50 55

<210> 418
 <211> 81
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (44)
 <223> Xaa equals any amino acid

<400> 418
 Met Arg Met Arg Val Ala Val Ala Pro Arg Pro His Gln His Leu Val
 1 5 10 15
 Val Ser Val Ser Trp Ile Leu Ala Ile Leu Ile Ser Val Ser Gly Tyr
 20 25 30
 His Cys Phe His Leu Gln Phe Ser Tyr Met Val Xaa Asn Ile Phe Pro
 35 40 45
 His Val Tyr Leu Ser Ser Ala Tyr Leu Leu Arg Pro Val Ile Cys Ser
 50 55 60
 Asp Leu Leu Pro Val Phe Val Cys Leu His Val Cys Leu Cys Leu Ile
 65 70 75 80
 Phe

<210> 419
 <211> 80
 <212> PRT
 <213> Homo sapiens

<400> 419
 Met Cys Val Val Cys Val Cys Val Trp Cys Met Cys Val Cys Gly Val
 1 5 10 15
 Cys Val Cys Leu Cys Val Cys Gly Val Cys Met Cys Ile Ser Leu Asn
 20 25 30
 Glu Lys Leu Ala Pro Met Ile Met Glu Leu Thr Thr Pro Lys Val Cys
 35 40 45
 Arg Gln Gln Ala Gly Gly Pro Gly Gly Pro Val Val Trp Leu Gln Pro
 50 55 60
 Val Ser Glu Gly Leu Arg Thr Arg Arg Ala Gly Gly Ala Ala Ala Val
 65 70 75 80

<210> 420
 <211> 53
 <212> PRT
 <213> Homo sapiens

<400> 420
 Met Ser Thr Phe Val Cys Val Cys Val Phe Cys Phe Val Leu Arg Ser
 1 5 10 15
 Glu Ala Arg Ala Lys Arg Lys Gln Asp Gln Arg Asn Thr Lys Arg Cys
 20 25 30
 Leu Leu Thr Lys Gly Gln Arg Asp Leu Ser Val Asn Gln Ser Lys Ile
 35 40 45
 Asn Arg Thr Ala Asn
 50

<210> 421
 <211> 80
 <212> PRT
 <213> Homo sapiens

<400> 421
 Met Ala Leu Trp Val Thr Cys Ile Leu Ser Leu Cys Thr Trp Phe Ser
 1 5 10 15
 Cys Leu Tyr Gly Ala Asp Ser Leu Ala Asn Lys Cys Leu Ser Ala Gly
 20 25 30
 Ala Thr Arg Lys Ala Phe Pro Phe Cys Val Leu Phe Arg Asp Leu Glu
 35 40 45
 Val Gly Leu Gly Phe Glu Gly Phe Val Thr His Leu Ala Cys Lys Leu
 50 55 60
 Phe Cys Tyr Cys Glu Leu Ser Asp Ser Ala Leu Ser Leu Gly His Glu
 65 70 75 80

<210> 422
 <211> 320
 <212> PRT
 <213> Homo sapiens

<400> 422
 Met Arg Gly Ser Val Glu Cys Thr Trp Gly Trp Gly His Cys Ala Pro
 1 5 10 15

Ser Pro Leu Leu Leu Trp Thr Leu Leu Leu Phe Ala Ala Pro Phe Gly
 20 25 30
 Leu Leu Gly Glu Lys Thr Arg Gln Leu Leu Glu Phe Asp Ser Thr Asn
 35 40 45
 Val Ser Asp Thr Ala Ala Lys Pro Leu Gly Arg Pro Tyr Pro Pro Tyr
 50 55 60
 Ser Leu Ala Asp Phe Ser Trp Asn Asn Ile Thr Asp Ser Leu Asp Pro
 65 70 75 80
 Ala Thr Leu Ser Ala Thr Phe Gln Gly His Pro Met Asn Asp Pro Thr
 85 90 95
 Arg Thr Phe Ala Asn Gly Ser Leu Ala Phe Arg Val Gln Ala Phe Ser
 100 105 110
 Arg Ser Ser Arg Pro Ala Gln Pro Pro Arg Leu Leu His Thr Ala Asp
 115 120 125
 Thr Cys Gln Leu Glu Val Ala Leu Ile Gly Ala Ser Pro Arg Gly Asn
 130 135 140
 Arg Ser Leu Phe Gly Leu Glu Val Ala Thr Leu Gly Gln Gly Pro Asp
 145 150 155 160
 Cys Pro Ser Met Gln Glu Gln His Ser Ile Asp Asp Glu Tyr Ala Pro
 165 170 175
 Ala Val Phe Gln Leu Asp Gln Leu Leu Trp Gly Ser Leu Pro Ser Gly
 180 185 190
 Phe Ala Gln Trp Arg Pro Val Ala Tyr Ser Gln Lys Pro Gly Gly Arg
 195 200 205
 Glu Ser Ala Leu Pro Cys Gln Ala Ser Pro Leu His Pro Ala Leu Ala
 210 215 220
 Tyr Ser Leu Pro Gln Ser Pro Ile Val Arg Ala Phe Phe Gly Ser Gln
 225 230 235 240
 Asn Asn Phe Cys Ala Phe Asn Leu Thr Phe Gly Ala Ser Thr Gly Pro
 245 250 255
 Gly Tyr Trp Asp Gln His Tyr Leu Ser Trp Ser Met Leu Leu Gly Val
 260 265 270
 Gly Phe Pro Pro Val Asp Gly Leu Ser Pro Leu Val Leu Gly Ile Met
 275 280 285
 Ala Val Ala Leu Gly Ala Pro Gly Leu Met Leu Leu Gly Gly Gly Leu
 290 295 300
 Val Leu Leu Leu His His Lys Lys Tyr Ser Glu Tyr Gln Ser Ile Asn
 305 310 315 320

<210> 423
 <211> 115
 <212> PRT
 <213> Homo sapiens

<400> 423
 Met Leu Ala Leu Ser Ser Ser Phe Leu Val Leu Ser Tyr Leu Leu Thr
 1 5 10 15
 Arg Trp Cys Gly Ser Val Gly Phe Ile Leu Ala Asn Cys Phe Asn Met
 20 25 30
 Gly Ile Arg Ile Thr Gln Ser Leu Cys Phe Ile His Arg Tyr Tyr Arg
 35 40 45
 Arg Ala Pro Thr Gly Pro Trp Leu Ala Cys Thr Tyr Arg Gln Ser Cys
 50 55 60
 Ser Gly His Leu Pro Ser Val Val Gly Leu Leu Leu Phe Arg Arg Tyr
 65 70 75 80
 Ser Ser Ala Val Ser Arg Ala Gly Gln Pro Asp Trp His Thr Leu Leu
 85 90 95
 Trp Gly Pro Ser Val Trp Glu Gln Leu Ser Gly Gln His Ser Ser Gln
 100 105 110
 Arg Pro Ser
 115

<210> 424
 <211> 402
 <212> PRT
 <213> Homo sapiens

<400> 424
 Met Tyr Ser Gly Asn Arg Ser Gly Gly His Gly Tyr Trp Asp Gly Gly
 1 5 10 15
 Gly Ala Ala Gly Ala Glu Gly Pro Ala Pro Ala Gly Thr Leu Ser Pro
 20 25 30
 Ala Pro Leu Phe Ser Pro Gly Thr Tyr Glu Arg Leu Ala Leu Leu Leu
 35 40 45
 Gly Ser Ile Gly Leu Leu Gly Val Gly Asn Asn Leu Leu Val Leu Val
 50 55 60
 Leu Tyr Tyr Lys Phe Gln Arg Leu Arg Thr Pro Thr His Leu Leu Leu
 65 70 75 80
 Val Asn Ile Ser Leu Ser Asp Leu Leu Val Ser Leu Phe Gly Val Thr
 85 90 95
 Phe Thr Phe Val Ser Cys Leu Arg Asn Gly Trp Val Trp Asp Thr Val
 100 105 110
 Gly Cys Val Trp Asp Gly Phe Ser Gly Ser Leu Phe Gly Ile Val Ser

115	120	125
Ile Ala Thr Leu Thr Val Leu Ala Tyr Glu Arg Tyr Ile Arg Val Val 130	135	140
His Ala Arg Val Ile Asn Phe Ser Trp Ala Trp Arg Ala Ile Thr Tyr 145	150	155 160
Ile Trp Leu Tyr Ser Leu Ala Trp Ala Gly Ala Pro Leu Leu Gly Trp 165	170	175
Asn Arg Tyr Ile Leu Asp Val His Gly Leu Gly Cys Thr Val Asp Trp 180	185	190
Lys Ser Lys Asp Ala Asn Asp Ser Ser Phe Val Leu Phe Leu Phe Leu 195	200	205
Gly Cys Leu Val Val Pro Leu Gly Val Ile Ala His Cys Tyr Gly His 210	215	220
Ile Leu Tyr Ser Ile Arg Met Leu Arg Cys Val Glu Asp Leu Gln Thr 225	230	235 240
Ile Gln Val Ile Lys Ile Leu Lys Tyr Glu Lys Lys Leu Ala Lys Met 245	250	255
Cys Phe Leu Met Ile Phe Thr Phe Leu Val Cys Trp Met Pro Tyr Ile 260	265	270
Val Ile Cys Phe Leu Val Val Asn Gly His Gly His Leu Val Thr Pro 275	280	285
Thr Ile Ser Ile Val Ser Tyr Leu Phe Ala Lys Ser Asn Thr Val Tyr 290	295	300
Asn Pro Val Ile Tyr Val Phe Met Ile Arg Lys Phe Arg Arg Ser Leu 305	310	315 320
Leu Gln Leu Leu Cys Leu Arg Leu Leu Arg Cys Gln Arg Pro Ala Lys 325	330	335
Asp Leu Pro Ala Ala Gly Ser Glu Met Gln Ile Arg Pro Ile Val Met 340	345	350
Ser Gln Lys Asp Gly Asp Arg Pro Lys Lys Lys Val Thr Phe Asn Ser 355	360	365
Ser Ser Ile Ile Phe Ile Ile Thr Ser Asp Glu Ser Leu Ser Val Asp 370	375	380
Asp Ser Asp Lys Thr Asn Gly Ser Lys Val Asp Val Ile Gln Val Arg 385	390	395 400
Pro Leu		

<210> 425

<211> 76

<212> PRT

<213> Homo sapiens

<400> 425

Met Gly Ala His Ser Phe Gly Phe Gln Leu Phe Met Ser Val Ser Val
 1 5 10 15
 Leu Trp Gly Arg Leu Cys Leu Tyr Gly Arg Phe Ser Val Ile Thr Phe
 20 25 30
 Ala Ser Pro Pro Thr Thr Phe Met Asp Ile Gln Cys Cys Phe Ala Leu
 35 40 45
 Gln Leu Glu Arg Arg Asp Gly Gln Leu Val Thr Leu Ser His Ile Ala
 50 55 60
 Thr Phe Ile Cys Ser Gly Lys Lys Leu Asp Arg Trp
 65 70 75

<210> 426

<211> 41

<212> PRT

<213> Homo sapiens

<400> 426

Met Ala Val Pro Leu Phe Leu Tyr Ile Phe Thr Leu Leu Pro Leu Leu
 1 5 10 15
 Pro Phe Leu Leu Ser Leu Cys Phe Ser Pro Leu Thr Val Lys Arg Ser
 20 25 30
 Ser Ser Ser Glu Ser Lys Ser Ser Leu
 35 40

<210> 427

<211> 35

<212> PRT

<213> Homo sapiens

<400> 427

Ile Tyr Ser Ser Gly Tyr Phe Gln Ile Tyr Asn Met Leu Leu Leu Thr
 1 5 10 15
 Ile Leu Ile Leu Leu Cys Asn Arg Thr Pro Glu Leu Ile Pro Gly Phe
 20 25 30
 Tyr Ile Arg
 35

<210> 428

<211> 484

<212> PRT

<213> Homo sapiens

<400> 428

Met Pro Arg His Leu Ser Gly Leu Leu Leu Leu Trp Pro Leu Leu

1	5	10	15
Leu Leu Leu	Pro Pro Thr	Pro Ala Ala	Pro Gly Pro Leu Ala Arg Pro
	20	25	30
Gly Leu Arg	Arg Leu Gly	Thr Arg Gly	Pro Gly Gly Ser Pro Gly Arg
	35	40	45
Arg Pro Val	Ser Ala Val	Pro Thr Arg	Ala Pro Tyr Ser Gly Ala Gly
	50	55	60
Gln Pro Gly	Gly Ala Arg	Gly Ala Gly	Val Cys Arg Ser Arg Pro Leu
	65	70	75
Asp Leu Val	Phe Ile Ile	Asp Ser Ser	Arg Ser Val Arg Pro Leu Glu
	85	90	95
Phe Thr Lys	Val Lys Thr	Phe Val Ser	Gln Ile Ile Asp Thr Leu Asp
	100	105	110
Ile Gly Ala	Ala Asp Thr	Arg Val Ala	Val Val Asn Tyr Ala Ser Thr
	115	120	125
Val Lys Ile	Glu Phe His	Leu Gln Thr	His Ser Asp Lys Gln Ser Leu
	130	135	140
Lys Gln Ala	Val Ala Arg	Ile Thr Pro	Leu Ser Thr Gly Thr Met Ser
	145	150	155
Gly Leu Ala	Ile Gln Thr	Ala Met Asp	Glu Ala Phe Thr Val Glu Ala
	165	170	175
Gly Ala Arg	Gly Pro Thr	Ser Asn Ile	Pro Lys Val Ala Ile Ile Val
	180	185	190
Thr Asp Gly	Arg Pro Gln	Asp Gln Val	Asn Glu Val Ala Ala Arg Ala
	195	200	205
Arg Ala Ser	Gly Ile Glu	Leu Tyr Ala	Val Gly Val Asp Arg Ala Asp
	210	215	220
Met Glu Ser	Leu Lys Met	Met Ala Ser	Glu Pro Leu Asp Glu His Val
	225	230	235
Phe Tyr Val	Glu Thr Tyr	Gly Val Ile	Glu Lys Leu Ser Ser Arg Phe
	245	250	255
Gln Glu Thr	Phe Cys Ala	Leu Asp Pro	Cys Val Leu Gly Thr His Arg
	260	265	270
Cys Gln His	Val Cys Val	Ser Asp Gly	Glu Gly Lys His His Cys Glu
	275	280	285
Cys Ser Gln	Gly Tyr Ser	Leu Asn Ala	Asp Gln Lys Thr Cys Ser Ala
	290	295	300
Ile Asp Lys	Cys Ala Leu	Asn Thr His	Gly Cys Glu His Ile Cys Val
	305	310	315
Asn Asp Arg	Thr Gly Ser	Tyr His Cys	Glu Cys Tyr Glu Gly Tyr Thr
	325	330	335

Leu Asn Gln Asp Arg Lys Thr Cys Ser Ala Gln Asp Gln Cys Ala Phe
 340 345 350
 Gly Thr His Gly Cys Gln His Ile Cys Val Asn Asp Arg Asp Gly Ser
 355 360 365
 His His Cys Glu Cys Tyr Glu Gly Tyr Thr Leu Asn Ala Asp Asn Lys
 370 375 380
 Thr Cys Ser Val Arg Ser Glu Cys Ala Gly Gly Ser His Gly Cys Gln
 385 390 395 400
 His Leu Cys Val Asp Asp Gly Pro Ala Ala Tyr His Cys Asp Cys Phe
 405 410 415
 Pro Gly Tyr Thr Leu Thr Glu Asp Arg Arg Thr Cys Ala Ala Ile Glu
 420 425 430
 Glu Ala Arg Arg Leu Val Ser Thr Glu Asp Ala Cys Gly Cys Glu Ala
 435 440 445
 Thr Leu Ala Phe Gln Glu Arg Ala Ser Ser Tyr Leu Gln Arg Leu Asn
 450 455 460
 Ala Lys Leu Asp Asp Ile Leu Gly Lys Leu Gln Ala Asp Ala Tyr Gly
 465 470 475 480
 Gln Ile His Arg

<210> 429
 <211> 129
 <212> PRT
 <213> Homo sapiens

<400> 429
 Met Ala Pro Ser Gly Pro Leu Leu Leu Val Leu Leu Val Pro Leu Ala
 1 5 10 15
 Ala Ala Arg Ala Gly Pro Tyr Phe Arg Pro Gly Arg Gly Cys Arg Leu
 20 25 30
 Pro Leu Arg Gly Asp Gln Leu Ser Gly Leu Gly Arg Arg Thr Tyr Pro
 35 40 45
 Arg Pro His Glu Tyr Leu Ser Pro Ser Asp Leu Pro Lys Ser Trp Asp
 50 55 60
 Trp Arg Asn Val Asn Gly Val Asn Tyr Ala Ser Ala Thr Arg Asn Gln
 65 70 75 80
 His Ile Pro Gln Tyr Cys Gly Ser Cys Trp Ala His Gly Ser Thr Ser
 85 90 95
 Ala Met Ala Gly Pro Asp Gln His Gln Glu Lys Gly Gly Val Ala Leu
 100 105 110
 His Pro Ala Val Arg Ala Ala Arg Pro Arg Leu Arg Gln Arg Gly Leu

115 120 125

Leu

<210> 430
 <211> 164
 <212> PRT
 <213> Homo sapiens

<400> 430
 Met Thr Thr Trp Ser Cys Leu Val Ala Met Ile Val Ser Gly Val Ile
 1 5 10 15
 Thr Ala Val Trp Ala Val Arg Ala Ala Pro Ile Trp Arg Ser Gln Val
 20 25 30
 Lys Gln Lys Met Arg Ile Gly Lys Gln Gly Asn Cys Arg Pro Pro Arg
 35 40 45
 Cys Ile Cys Ser Ala Leu Gly Leu Leu Ala Pro Trp Met Ala Val Val
 50 55 60
 Leu Ser Gln Leu Ser Val Arg Cys Val Val Ser Trp Val Gln Gly Lys
 65 70 75 80
 Pro Ser Ser Pro Arg Pro Arg Gly Ser Ala Ala Ser Pro Ala Pro Gly
 85 90 95
 Ala Thr Pro Pro Thr Pro Arg Lys Pro Val Ser Trp Leu Gly Tyr Arg
 100 105 110
 Glu Asn His Arg Pro Lys Lys Pro Lys Ser Cys Thr Arg Leu Pro Gly
 115 120 125
 Leu Pro Lys Leu Glu Pro Ser Ser Thr Leu Lys Gly Gln Asp Ser Trp
 130 135 140
 Gln Met Gly His Gln Gln Asp Lys Thr Leu Trp Ser Trp Ala Ser Thr
 145 150 155 160
 Gly Gly Ser Ser

<210> 431
 <211> 56
 <212> PRT
 <213> Homo sapiens

<400> 431
 Met Pro Leu Glu Glu Ser Phe Glu Ile Val Leu Lys Leu Val Pro Leu
 1 5 10 15
 Leu Gly Leu Glu Leu Phe Phe Phe Leu Phe Ile Ile Asn Gly Tyr Ile
 20 25 30
 Asn Val Tyr Cys Pro Ser Gln Tyr Phe Ile Tyr Ala Lys Asp Ser Leu

35 40 45
 Ala Gly Leu Ala Leu Ile Pro Gln
 50 55

<210> 432
 <211> 40
 <212> PRT
 <213> Homo sapiens

<400> 432
 Met Val Ala Met Val Phe Leu Lys Ile Ser Val Leu Pro Leu Met Cys
 1 5 10 15
 Arg Gly Gln Thr Lys His Lys Val Leu Arg Asp His Ala Tyr Pro Arg
 20 25 30
 Val Ser Gln Lys Arg Gly His Ile
 35 40

<210> 433
 <211> 41
 <212> PRT
 <213> Homo sapiens

<400> 433
 Met Cys Val Cys Leu Ile Cys Ser Ile Cys Gln Phe Leu Trp Cys Lys
 1 5 10 15
 Tyr Ser His Tyr Ser Cys Phe Gln Ala Asn Ile Val Ile Pro Gln Lys
 20 25 30
 Met Glu Leu Gly Arg His Asn Gln Asp
 35 40

<210> 434
 <211> 211
 <212> PRT
 <213> Homo sapiens

<400> 434
 Met Val Phe Leu Lys Phe Phe Cys Met Ser Phe Phe Cys His Leu Cys
 1 5 10 15
 Gln Gly Tyr Phe Asp Gly Pro Leu Tyr Pro Glu Met Ser Asn Gly Thr
 20 25 30
 Leu His His Tyr Phe Val Pro Asp Gly Asp Tyr Glu Glu Asn Asp Asp
 35 40 45
 Pro Glu Lys Cys Gln Leu Leu Phe Arg Val Ser Asp His Arg Arg Cys
 50 55 60
 Ser Gln Gly Glu Gly Ser Gln Val Gly Ser Leu Leu Ser Leu Thr Leu
 65 70 75 80

Arg Glu Glu Phe Thr Val Leu Gly His Gln Val Glu Asp Ala Gly Arg
 85 90 95
 Val Leu Glu Gly Ile Ser Lys Ser Ile Ser Tyr Asp Leu Asp Gly Glu
 100 105 110
 Glu Ser Tyr Gly Lys Tyr Leu Arg Arg Glu Ser His Gln Ile Gly Asp
 115 120 125
 Ala Tyr Ser Asn Ser Asp Lys Ser Leu Thr Glu Leu Glu Ser Lys Phe
 130 135 140
 Lys Gln Gly Gln Glu Gln Asp Ser Arg Gln Glu Ser Arg Leu Asn Glu
 145 150 155 160
 Asp Phe Leu Gly Met Leu Val His Thr Arg Ser Leu Leu Lys Glu Thr
 165 170 175
 Leu Asp Ile Ser Val Gly Leu Arg Asp Lys Tyr Glu Leu Leu Ala Leu
 180 185 190
 Thr Ile Arg Ser His Gly Thr Arg Leu Gly Arg Leu Lys Asn Asp Tyr
 195 200 205
 Leu Lys Val
 210

<210> 435
 <211> 53
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (49)
 <223> Xaa equals any amino acid

<400> 435
 Met Ser His His Ala Gly Leu Gly Gly Gly Ile Leu Phe Ser Leu Lys
 1 5 10 15
 Ile Ser Phe Phe Ile Ala Leu Ala Val Val Gly Gly Ser Arg Gly Val
 20 25 30
 Asn Asp Cys Gln Leu Gly Gly Cys Arg Val Gly Ser Cys Pro Arg Val
 35 40 45
 Xaa Val Arg Val Ala
 50

<210> 436
 <211> 48
 <212> PRT
 <213> Homo sapiens

<400> 436

Met Met Leu Tyr Gln Asn Met Leu Leu Tyr Phe Arg Ile Ile Gly Val
 1 5 10 15
 Leu Ala Leu Asn Phe Ser Ile Ser Pro Ile Phe Phe His Gly Ser Leu
 20 25 30
 Gly Lys Leu Tyr Val Tyr Ser Ala Ala Lys Tyr Ser Leu Glu Leu Lys
 35 40 45

<210> 437
 <211> 201
 <212> PRT
 <213> Homo sapiens

<400> 437
 Met Lys Leu Leu Ile Leu Phe Leu Ser His Leu Leu Ser Leu Ala Phe
 1 5 10 15
 Gly Ile Leu Cys Leu Ser Val Thr Val Ile Leu Ser Leu Leu Leu Ser
 20 25 30
 Phe Ser Lys Arg Gly Phe Ser Val Arg Ser Phe Gly Thr Gly Thr His
 35 40 45
 Val Lys Leu Pro Gly Pro Ala Pro Asp Lys Pro Asn Val Tyr Asp Phe
 50 55 60
 Lys Thr Thr Tyr Asp Gln Met Tyr Asn Asp Leu Leu Arg Lys Asp Lys
 65 70 75 80
 Glu Leu Tyr Thr Gln Asn Gly Ile Leu His Met Leu Asp Arg Asn Lys
 85 90 95
 Arg Ile Lys Pro Arg Pro Glu Arg Phe Gln Asn Cys Lys Asp Leu Phe
 100 105 110
 Asp Leu Ile Leu Thr Cys Glu Glu Arg Val Tyr Asp Gln Val Val Glu
 115 120 125
 Asp Leu Asn Ser Arg Glu Gln Glu Thr Cys Gln Pro Val His Val Val
 130 135 140
 Asn Val Asp Ile Gln Asp Asn His Glu Glu Ala Thr Leu Gly Ala Phe
 145 150 155 160
 Leu Ile Cys Glu Leu Cys Gln Cys Ile Gln His Thr Glu Asp Met Glu
 165 170 175
 Asn Glu Ile Asp Glu Leu Leu Gln Glu Phe Glu Glu Lys Ser Gly Arg
 180 185 190
 Thr Phe Leu His Thr Val Cys Phe Tyr
 195 200

<210> 438
 <211> 420
 <212> PRT
 <213> Homo sapiens

<400> 438

```

Met Ala Pro Trp Pro Pro Lys Gly Leu Val Pro Ala Val Leu Trp Gly
  1              5              10              15

Leu Ser Leu Phe Leu Asn Leu Pro Gly Pro Ile Trp Leu Gln Pro Ser
      20              25              30

Pro Pro Pro Gln Ser Ser Pro Pro Pro Gln Pro His Pro Cys His Thr
      35              40              45

Cys Arg Gly Leu Val Asp Ser Phe Asn Lys Gly Leu Glu Arg Thr Ile
      50              55              60

Arg Asp Asn Phe Gly Gly Gly Asn Thr Ala Trp Glu Glu Glu Asn Leu
      65              70              75              80

Ser Lys Tyr Lys Asp Ser Glu Thr Arg Leu Val Glu Val Leu Glu Gly
      85              90              95

Val Cys Ser Lys Ser Asp Phe Glu Cys His Arg Leu Leu Glu Leu Ser
      100             105             110

Glu Glu Leu Val Glu Ser Trp Trp Phe His Lys Gln Gln Glu Ala Pro
      115             120             125

Asp Leu Phe Gln Trp Leu Cys Ser Asp Ser Leu Lys Leu Cys Cys Pro
      130             135             140

Ala Gly Thr Phe Gly Pro Ser Cys Leu Pro Cys Pro Gly Gly Thr Glu
      145             150             155             160

Arg Pro Cys Gly Gly Tyr Gly Gln Cys Glu Gly Glu Gly Thr Arg Gly
      165             170             175

Gly Ser Gly His Cys Asp Cys Gln Ala Gly Tyr Gly Gly Glu Ala Cys
      180             185             190

Gly Gln Cys Gly Leu Gly Tyr Phe Glu Ala Glu Arg Asn Ala Ser His
      195             200             205

Leu Val Cys Ser Ala Cys Phe Gly Pro Cys Ala Arg Cys Ser Gly Pro
      210             215             220

Glu Glu Ser Asn Cys Leu Gln Cys Lys Lys Gly Trp Ala Leu His His
      225             230             235             240

Leu Lys Cys Val Asp Ile Asp Glu Cys Gly Thr Glu Gly Ala Asn Cys
      245             250             255

Gly Ala Asp Gln Phe Cys Val Asn Thr Glu Gly Ser Tyr Glu Cys Arg
      260             265             270

Asp Cys Ala Lys Ala Cys Leu Gly Cys Met Gly Ala Gly Pro Gly Arg
      275             280             285

Cys Lys Lys Cys Ser Pro Gly Tyr Gln Gln Val Gly Ser Lys Cys Leu

```

290 295 300
 Asp Val Asp Glu Cys Glu Thr Glu Val Cys Pro Gly Glu Asn Lys Gln
 305 310 315 320
 Cys Glu Asn Thr Glu Gly Gly Tyr Arg Cys Ile Cys Ala Glu Gly Tyr
 325 330 335
 Lys Gln Met Glu Gly Ile Cys Val Lys Glu Gln Ile Pro Glu Ser Ala
 340 345 350
 Gly Phe Phe Ser Glu Met Thr Glu Asp Glu Leu Val Val Leu Gln Gln
 355 360 365
 Met Phe Phe Gly Ile Ile Ile Cys Ala Leu Ala Thr Leu Ala Ala Lys
 370 375 380
 Gly Asp Leu Val Phe Thr Ala Ile Phe Ile Gly Ala Val Ala Ala Met
 385 390 395 400
 Thr Gly Tyr Trp Leu Ser Glu Arg Ser Asp Arg Val Leu Glu Gly Phe
 405 410 415
 Ile Lys Gly Arg
 420

<210> 439
 <211> 102
 <212> PRT
 <213> Homo sapiens

<400> 439
 Met Thr Val Arg Arg Leu Ser Leu Leu Cys Arg Asp Leu Trp Ala Leu
 1 5 10 15
 Trp Leu Leu Leu Lys Ala Gly Ala Val Arg Gly Ala Arg Ala Gly Pro
 20 25 30
 Arg Leu Pro Gly Arg Cys Cys Gly Ala Thr Cys Gly Asp Ala Gly Arg
 35 40 45
 Gly Trp Thr Phe Trp Ala Gln Pro Cys Pro Gln Arg Leu Leu Gly Gln
 50 55 60
 Lys Pro Gly Ala Gly Gly Cys Arg Gly Trp Val Leu Gly Trp Val Pro
 65 70 75 80
 Pro Arg Pro Glu Glu Pro Cys Ser Leu Ala Gly Lys Val Cys Thr Gly
 85 90 95
 Leu Ala Arg Trp Met Val
 100

<210> 440
 <211> 53
 <212> PRT
 <213> Homo sapiens

<220>

<221> SITE

<222> (11)

<223> Xaa equals any amino acid

<400> 440

Met Cys Lys Ala Val Cys Lys His Arg Leu Xaa Leu Phe Ala Val Ser
 1 5 10 15

Ser Phe Ser Leu Gly Leu Gly Trp Val Cys Val Leu Val Leu Met Leu
 20 25 30

Trp Pro Val Arg Leu Ser Leu Ala Pro Arg Pro Val Gln Leu Gln Gln
 35 40 45

Arg Arg Ser His Cys
 50

<210> 441

<211> 472

<212> PRT

<213> Homo sapiens

<400> 441

Met Lys Phe Leu Ile Phe Ala Phe Phe Gly Gly Val His Leu Leu Ser
 1 5 10 15

Leu Cys Ser Gly Lys Ala Ile Cys Lys Asn Gly Ile Ser Lys Arg Thr
 20 25 30

Phe Glu Glu Ile Lys Glu Glu Ile Ala Ser Cys Gly Asp Val Ala Lys
 35 40 45

Ala Ile Ile Asn Leu Ala Val Tyr Gly Lys Ala Gln Asn Arg Ser Tyr
 50 55 60

Glu Arg Leu Ala Leu Leu Val Asp Thr Val Gly Pro Arg Leu Ser Gly
 65 70 75 80

Ser Lys Asn Leu Glu Lys Ala Ile Gln Ile Met Tyr Gln Asn Leu Gln
 85 90 95

Gln Asp Gly Leu Glu Lys Val His Leu Glu Pro Val Arg Ile Pro His
 100 105 110

Trp Glu Arg Gly Glu Glu Ser Ala Val Met Leu Glu Pro Arg Ile His
 115 120 125

Lys Ile Ala Ile Leu Gly Leu Gly Ser Ser Ile Gly Thr Pro Pro Glu
 130 135 140

Gly Ile Thr Ala Glu Val Leu Val Val Thr Ser Phe Asp Glu Leu Gln
 145 150 155 160

Arg Arg Ala Ser Glu Ala Arg Gly Lys Ile Val Val Tyr Asn Gln Pro
 165 170 175

Tyr Ile Asn Tyr Ser Arg Thr Val Gln Tyr Arg Thr Gln Gly Ala Val

180					185					190					
Glu	Ala	Ala	Lys	Val	Gly	Ala	Leu	Ala	Ser	Leu	Ile	Arg	Ser	Val	Ala
	195						200					205			
Ser	Phe	Ser	Ile	Tyr	Ser	Pro	His	Thr	Gly	Ile	Gln	Glu	Tyr	Gln	Asp
	210					215					220				
Gly	Val	Pro	Lys	Ile	Pro	Thr	Ala	Cys	Ile	Thr	Val	Glu	Asp	Ala	Glu
	225					230					235				240
Met	Met	Ser	Arg	Met	Ala	Ser	His	Gly	Ile	Lys	Ile	Val	Ile	Gln	Leu
				245					250					255	
Lys	Met	Gly	Ala	Lys	Thr	Tyr	Pro	Asp	Thr	Asp	Ser	Phe	Asn	Thr	Val
			260					265					270		
Ala	Glu	Ile	Thr	Gly	Ser	Lys	Tyr	Pro	Glu	Gln	Val	Val	Leu	Val	Ser
		275					280					285			
Gly	His	Leu	Asp	Ser	Trp	Asp	Val	Gly	Gln	Gly	Ala	Met	Asp	Asp	Gly
	290					295					300				
Gly	Gly	Ala	Phe	Ile	Ser	Trp	Glu	Ala	Leu	Ser	Leu	Ile	Lys	Asp	Leu
	305					310					315				320
Gly	Leu	Arg	Pro	Lys	Arg	Thr	Leu	Arg	Leu	Val	Leu	Trp	Thr	Ala	Glu
			325					330						335	
Glu	Gln	Gly	Gly	Val	Gly	Ala	Phe	Gln	Tyr	Tyr	Gln	Leu	His	Lys	Val
			340					345					350		
Asn	Ile	Ser	Asn	Tyr	Ser	Leu	Val	Met	Glu	Ser	Asp	Ala	Gly	Thr	Phe
		355					360					365			
Leu	Pro	Thr	Gly	Leu	Gln	Phe	Thr	Gly	Ser	Glu	Lys	Ala	Arg	Ala	Ile
	370					375					380				
Met	Glu	Glu	Val	Met	Ser	Leu	Leu	Gln	Pro	Leu	Asn	Ile	Thr	Gln	Val
	385					390					395				400
Leu	Ser	His	Gly	Glu	Gly	Thr	Asp	Ile	Asn	Phe	Trp	Ile	Gln	Ala	Gly
			405					410					415		
Val	Pro	Gly	Ala	Ser	Leu	Leu	Asp	Asp	Leu	Tyr	Lys	Tyr	Phe	Phe	Phe
			420					425					430		
His	His	Ser	His	Gly	Asp	Thr	Met	Thr	Val	Met	Asp	Pro	Lys	Gln	Met
		435					440					445			
Asn	Val	Ala	Ala	Ala	Val	Trp	Ala	Val	Val	Ser	Tyr	Val	Val	Ala	Asp
	450					455					460				
Met	Glu	Glu	Met	Leu	Pro	Arg	Ser								
	465					470									

<210> 442

<211> 359

<212> PRT

<213> Homo sapiens

<400> 442

```

Met Lys Leu Gly Cys Val Leu Met Ala Trp Ala Leu Tyr Leu Ser Leu
  1              5              10              15

Gly Val Leu Trp Val Ala Gln Met Leu Leu Ala Ala Ser Phe Glu Thr
          20              25              30

Leu Gln Cys Glu Gly Pro Val Cys Thr Glu Glu Ser Ser Cys His Thr
          35              40              45

Glu Asp Asp Leu Thr Asp Ala Arg Glu Ala Gly Phe Gln Val Lys Ala
  50              55              60

Tyr Thr Phe Ser Glu Pro Phe His Leu Ile Val Ser Tyr Asp Trp Leu
  65              70              75              80

Ile Leu Gln Gly Pro Ala Lys Pro Val Phe Glu Gly Asp Leu Leu Val
          85              90              95

Leu Arg Cys Gln Ala Trp Gln Asp Trp Pro Leu Thr Gln Val Thr Phe
          100             105             110

Tyr Arg Asp Gly Ser Ala Leu Gly Pro Pro Gly Pro Asn Arg Glu Phe
          115             120             125

Ser Ile Thr Val Val Gln Lys Ala Asp Ser Gly His Tyr His Cys Ser
          130             135             140

Gly Ile Phe Gln Ser Pro Gly Pro Gly Ile Pro Glu Thr Ala Ser Val
          145             150             155             160

Val Ala Ile Thr Val Gln Glu Leu Phe Pro Ala Pro Ile Leu Arg Ala
          165             170             175

Val Pro Ser Ala Glu Pro Gln Ala Gly Gly Pro Met Thr Leu Ser Cys
          180             185             190

Gln Thr Lys Leu Pro Leu Gln Arg Ser Ala Ala Arg Leu Leu Phe Ser
          195             200             205

Phe Tyr Lys Asp Gly Arg Ile Val Gln Ser Arg Gly Leu Ser Ser Glu
          210             215             220

Phe Gln Ile Pro Thr Ala Ser Glu Asp His Ser Gly Ser Tyr Trp Cys
          225             230             235             240

Glu Ala Ala Thr Glu Asp Asn Gln Val Trp Lys Gln Ser Pro Gln Leu
          245             250             255

Glu Ile Arg Val Gln Gly Ala Ser Ser Ser Ala Ala Pro Pro Thr Leu
          260             265             270

Asn Pro Ala Pro Gln Lys Ser Ala Ala Pro Gly Thr Ala Pro Glu Glu
          275             280             285

Ala Pro Gly Pro Leu Pro Pro Pro Pro Thr Pro Ser Ser Glu Asp Pro
          290             295             300

Gly Phe Ser Ser Pro Leu Gly Met Pro Asp Pro His Leu Tyr His Gln

```

[illegible]

```
<210> 443
<211> 379
<212> PRT
<213> Homo sapiens
```

```
<220>  
<221> SITE  
<222> (283)  
<223> Xaa equals any amino acid
```

```
<220>  
<221> SITE  
<222> (303)  
<223> Xaa equals any amino acid
```

```
<220>  
<221> SITE  
<222> (307)  
<223> Xaa equals any amino acid
```

```

<400> 443
Met Gly Tyr Ile Asp Asp Pro Asp Lys Tyr His Gln Gly Phe Glu Leu
  1                               5                10                15

Leu Leu Ser Ala Leu Gly Asp Pro Ser Glu Arg Val Val Ser Ala Thr
      20                25                30

His Gln Val Phe Leu Pro Ala Tyr Ala Ala Trp Thr Thr Glu Leu Gly
      35                40                45

Asn Leu Gln Ser His Leu Ile Leu Thr Leu Leu Asn Lys Ile Glu Lys
      50                55                60

Leu Leu Arg Glu Gly Glu His Gly Leu Asp Glu His Lys Leu His Met
      65                70                75                80

Tyr Leu Ser Ala Leu Gln Ser Leu Ile Pro Ser Leu Phe Ala Leu Val
      85                90                95

Leu Gln Asn Ala Pro Phe Ser Ser Lys Ala Lys Leu His Gly Glu Val
      100                105                110

Pro Gln Ile Glu Val Thr Arg Phe Pro Arg Pro Met Ser Pro Leu Gln
      115                120                125

Asp Val Ser Thr Ile Ile Gly Ser Arg Glu Gln Leu Ala Val Leu Leu
      130                135                140

```

Gln Leu Tyr Asp Tyr Gln Leu Glu Gln Glu Gly Thr Thr Gly Trp Glu
 145 150 155 160
 Ser Leu Leu Trp Val Val Asn Gln Leu Leu Pro Gln Leu Ile Glu Ile
 165 170 175
 Val Gly Lys Ile Asn Val Thr Ser Thr Ala Cys Val His Glu Phe Ser
 180 185 190
 Arg Phe Phe Trp Arg Leu Cys Arg Thr Phe Gly Lys Ile Phe Thr Asn
 195 200 205
 Thr Lys Val Lys Pro Gln Phe Gln Glu Ile Leu Arg Leu Ser Glu Glu
 210 215 220
 Asn Ile Asp Ser Ser Ala Gly Asn Gly Val Leu Thr Lys Ala Thr Val
 225 230 235 240
 Pro Ile Tyr Ala Thr Gly Val Leu Thr Cys Tyr Ile Gln Glu Glu Asp
 245 250 255
 Arg Lys Leu Leu Val Gly Phe Leu Glu Asp Val Met Thr Leu Leu Ser
 260 265 270
 Leu Ser His Ala Pro Leu Asp Ser Leu Lys Xaa Ser Phe Val Glu Leu
 275 280 285
 Gly Ala Asn Gln Ala Tyr His Glu Leu Leu Leu Thr Val Leu Xaa Tyr
 290 295 300
 Gly Val Xaa His Thr Ser Ala Leu Val Arg Cys Thr Ala Ala Arg Met
 305 310 315 320
 Phe Glu Leu Leu Val Lys Gly Val Asn Glu Thr Leu Val Ala Gln Arg
 325 330 335
 Val Val Pro Ala Leu Ile Thr Leu Ser Ser Asp Pro Glu Ile Ser Val
 340 345 350
 Arg Ile Ala Thr Ile Pro Ala Phe Gly Thr Ile Met Glu Thr Val Ile
 355 360 365
 Gln Arg Glu Leu Leu Glu Arg Val Lys Met Gln
 370 375

<210> 444

<211> 48

<212> PRT

<213> Homo sapiens

<400> 444

Met Ser Thr Val Thr Trp Leu Leu Lys Leu Phe Thr Gln Phe Met Phe
 1 5 10 15

Pro Pro Thr Val Ser Asn Ser His Thr Cys Ala Arg Tyr Tyr Val Phe
 20 25 30

Asn Phe Cys Leu Ile Ile Ser Phe Asn Phe Asn Phe His Tyr His Trp
 35 40 45

<210> 445
 <211> 142
 <212> PRT
 <213> Homo sapiens

<400> 445
 Met Gly Cys Leu Val Trp Gly Pro Ser Trp Pro Pro Leu Ser Leu Leu
 1 5 10 15
 Ala Ser Leu Leu His Ser Gly Ile Ala Gly Arg Cys Leu Leu Cys Leu
 20 25 30
 Phe Lys Gly Leu Ala Ala Ala Ala Ser Leu Gln Ile Arg Asp Leu Ala
 35 40 45
 Ser Arg Leu Thr Thr Gly Pro Arg Thr Cys Arg Val Gln Pro Pro Pro
 50 55 60
 His Pro Gln Ser Ser Pro Pro Trp Pro Gly Pro Pro Gly Ala Glu Thr
 65 70 75 80
 Cys Arg Pro Leu Ser Arg Thr Val Gly Gly Val Cys Pro Ser Asp Trp
 85 90 95
 Pro Val Ser Trp Leu Leu Leu Pro Pro Leu Pro Glu Val Val Thr Cys
 100 105 110
 Ser Cys Pro Arg Ile Lys Ala Arg Pro Glu Arg Thr Pro Glu Leu Leu
 115 120 125
 Cys Ala Trp Gly Gly Arg Gly Lys His Ser Gln Leu Val Ala
 130 135 140

<210> 446
 <211> 399
 <212> PRT
 <213> Homo sapiens

<400> 446
 Met Gly Ile Leu Leu Gly Leu Leu Leu Leu Gly His Leu Thr Val Asp
 1 5 10 15
 Thr Tyr Gly Arg Pro Ile Leu Glu Val Pro Glu Ser Val Thr Gly Pro
 20 25 30
 Trp Lys Gly Asp Val Asn Leu Pro Cys Thr Tyr Asp Pro Leu Gln Gly
 35 40 45
 Tyr Thr Gln Val Leu Val Lys Trp Leu Val Gln Arg Gly Ser Asp Pro
 50 55 60
 Val Thr Ile Phe Leu Arg Asp Ser Ser Gly Asp His Ile Gln Gln Ala
 65 70 75 80

Lys Tyr Gln Gly Arg Leu His Val Ser His Lys Val Pro Gly Asp Val
 85 90 95
 Ser Leu Gln Leu Ser Thr Leu Glu Met Asp Asp Arg Ser His Tyr Thr
 100 105 110
 Cys Glu Val Thr Trp Gln Thr Pro Asp Gly Asn Gln Val Val Arg Asp
 115 120 125
 Lys Ile Thr Glu Leu Arg Val Gln Lys Leu Ser Val Ser Lys Pro Thr
 130 135 140
 Val Thr Thr Gly Ser Gly Tyr Gly Phe Thr Val Pro Gln Gly Met Arg
 145 150 155 160
 Ile Ser Leu Gln Cys Gln Ala Arg Gly Ser Pro Pro Ile Ser Tyr Ile
 165 170 175
 Trp Tyr Lys Gln Gln Thr Asn Asn Gln Glu Pro Ile Lys Val Ala Thr
 180 185 190
 Leu Ser Thr Leu Leu Phe Lys Pro Ala Val Ile Ala Asp Ser Gly Ser
 195 200 205
 Tyr Phe Cys Thr Ala Lys Gly Gln Val Gly Ser Glu Gln His Ser Asp
 210 215 220
 Ile Val Lys Phe Val Val Lys Asp Ser Ser Lys Leu Leu Lys Thr Lys
 225 230 235 240
 Thr Glu Ala Pro Thr Thr Met Thr Tyr Pro Leu Lys Ala Thr Ser Thr
 245 250 255
 Val Lys Gln Ser Trp Asp Trp Thr Thr Asp Met Asp Gly Tyr Leu Gly
 260 265 270
 Glu Thr Ser Ala Gly Pro Gly Lys Ser Leu Pro Val Phe Ala Ile Ile
 275 280 285
 Leu Ile Ile Ser Leu Cys Cys Met Val Val Phe Thr Met Ala Tyr Ile
 290 295 300
 Met Leu Cys Arg Lys Thr Ser Gln Gln Glu His Val Tyr Glu Ala Ala
 305 310 315 320
 Arg Ala His Ala Arg Glu Ala Asn Asp Ser Gly Glu Thr Met Arg Val
 325 330 335
 Ala Ile Phe Ala Ser Gly Cys Ser Ser Asp Glu Pro Thr Ser Gln Asn
 340 345 350
 Leu Gly Asn Asn Tyr Ser Asp Glu Pro Cys Ile Gly Gln Glu Tyr Gln
 355 360 365
 Ile Ile Ala Gln Ile Asn Gly Asn Tyr Ala Arg Leu Leu Asp Thr Val
 370 375 380
 Pro Leu Asp Tyr Glu Phe Leu Ala Thr Glu Gly Lys Ser Val Cys
 385 390 395

<210> 447
 <211> 223
 <212> PRT
 <213> Homo sapiens

<400> 447
 Met Lys Phe Val Pro Cys Leu Leu Leu Val Thr Leu Ser Cys Leu Gly
 1 5 10 15
 Thr Leu Gly Gln Ala Pro Arg Gln Lys Gln Gly Ser Thr Gly Glu Glu
 20 25 30
 Phe His Phe Gln Thr Gly Gly Arg Asp Ser Cys Thr Met Arg Pro Ser
 35 40 45
 Ser Leu Gly Gln Gly Ala Gly Glu Val Trp Leu Arg Val Asp Cys Arg
 50 55 60
 Asn Thr Asp Gln Thr Tyr Trp Cys Glu Tyr Arg Gly Gln Pro Ser Met
 65 70 75 80
 Cys Gln Ala Phe Ala Ala Asp Pro Lys Ser Tyr Trp Asn Gln Ala Leu
 85 90 95
 Gln Glu Leu Arg Arg Leu His His Ala Cys Gln Gly Ala Pro Val Leu
 100 105 110
 Arg Pro Ser Val Cys Arg Glu Ala Gly Pro Gln Ala His Met Gln Gln
 115 120 125
 Val Thr Ser Ser Leu Lys Gly Ser Pro Glu Pro Asn Gln Gln Pro Glu
 130 135 140
 Ala Gly Thr Pro Ser Leu Arg Pro Lys Ala Thr Val Lys Leu Thr Glu
 145 150 155 160
 Ala Thr Gln Leu Gly Lys Asp Ser Met Glu Glu Leu Gly Lys Ala Lys
 165 170 175
 Pro Thr Thr Arg Pro Thr Ala Lys Pro Thr Gln Pro Gly Pro Arg Pro
 180 185 190
 Gly Gly Asn Glu Glu Ala Lys Lys Lys Ala Trp Glu His Cys Trp Lys
 195 200 205
 Pro Phe Gln Ala Leu Cys Ala Phe Leu Ile Ser Phe Phe Arg Gly
 210 215 220

<210> 448
 <211> 135
 <212> PRT
 <213> Homo sapiens

<400> 448
 Met Gly Leu Trp Leu Gly Met Leu Ala Cys Val Phe Leu Ala Thr Ala
 1 5 10 15

Ala Phe Val Ala Tyr Thr Ala Arg Leu Asp Trp Lys Leu Ala Ala Glu
 20 25 30

Glu Ala Lys Lys His Ser Gly Arg Gln Gln Gln Gln Arg Ala Glu Ser
 35 40 45

Thr Ala Thr Arg Pro Gly Pro Glu Lys Ala Val Leu Ser Ser Val Ala
 50 55 60

Thr Gly Ser Ser Pro Gly Ile Thr Leu Thr Thr Tyr Ser Arg Ser Glu
 65 70 75 80

Cys His Val Asp Phe Phe Arg Thr Pro Glu Glu Ala His Ala Leu Ser
 85 90 95

Ala Pro Thr Ser Arg Leu Ser Val Lys Gln Leu Val Ile Arg Arg Gly
 100 105 110

Ala Ala Leu Gly Ala Ala Ser Ala Thr Leu Met Val Gly Leu Thr Val
 115 120 125

Arg Ile Leu Ala Thr Arg His
 130 135

<210> 449

<211> 181

<212> PRT

<213> Homo sapiens

<400> 449

Met Thr Val Ile Leu Ile Ile Leu Ile Val Val Met Ala Arg Tyr Cys
 1 5 10 15

Arg Ser Lys Asn Lys Asn Gly Tyr Glu Ala Gly Lys Lys Asp His Glu
 20 25 30

Asp Phe Phe Thr Pro Gln Gln His Asp Lys Ser Lys Lys Pro Lys Lys
 35 40 45

Asp Lys Lys Asn Lys Lys Ser Lys Gln Pro Leu Tyr Ser Ser Ile Val
 50 55 60

Thr Val Glu Ala Ser Lys Pro Asn Gly Gln Arg Tyr Asp Ser Val Asn
 65 70 75 80

Glu Lys Leu Ser Asp Ser Pro Ser Met Gly Arg Tyr Arg Ser Val Asn
 85 90 95

Gly Gly Pro Gly Ser Pro Asp Leu Ala Arg His Tyr Lys Ser Ser Ser
 100 105 110

Pro Leu Pro Thr Val Gln Leu His Pro Gln Ser Pro Thr Ala Gly Lys
 115 120 125

Lys His Gln Ala Val Gln Asp Leu Pro Pro Ala Asn Thr Phe Val Gly
 130 135 140

Ala Gly Asp Asn Ile Ser Ile Gly Ser Asp His Cys Ser Glu Tyr Ser
 145 150 155 160

Cys Gln Thr Asn Asn Lys Tyr Ser Lys Gln Met Arg Leu His Pro Tyr
 165 170 175

Ile Thr Val Phe Gly
 180

<210> 450

<211> 58

<212> PRT

<213> Homo sapiens

<400> 450

Met Arg Thr Phe Leu Thr Phe Val Ile Leu Lys Val Ile Leu Ile Phe
 1 5 10 15

Leu Ser Ser Cys Ala Ser Phe Thr Arg Asn Leu Leu Thr Trp Pro Asn
 20 25 30

Asp Val Ser Thr Glu Gln Phe Glu Thr Arg Pro Phe Gly Ser Glu Leu
 35 40 45

Leu Gln Thr Val Ile Asn Val Ser Arg Thr
 50 55

<210> 451

<211> 950

<212> PRT

<213> Homo sapiens

<400> 451

Met Thr Trp Arg Met Gly Pro Arg Phe Thr Met Leu Leu Ala Met Trp
 1 5 10 15

Leu Val Cys Gly Ser Glu Pro His Pro His Ala Thr Ile Arg Gly Ser
 20 25 30

His Gly Gly Arg Lys Val Pro Leu Val Ser Pro Asp Ser Ser Arg Pro
 35 40 45

Ala Arg Phe Leu Arg His Thr Gly Arg Ser Arg Gly Ile Glu Arg Ser
 50 55 60

Thr Leu Glu Glu Pro Asn Leu Gln Pro Leu Gln Arg Arg Arg Ser Val
 65 70 75 80

Pro Val Leu Arg Leu Ala Arg Pro Thr Glu Pro Pro Ala Arg Ser Asp
 85 90 95

Ile Asn Gly Ala Ala Val Arg Pro Glu Gln Arg Pro Ala Ala Arg Gly
 100 105 110

Ser Pro Arg Glu Met Ile Arg Asp Glu Gly Ser Ser Ala Arg Ser Arg
 115 120 125

Met Leu Arg Phe Pro Ser Gly Ser Ser Ser Pro Asn Ile Leu Ala Ser
 130 135 140

Phe Ala Gly Lys Asn Arg Val Trp Val Ile Ser Ala Pro His Ala Ser
 145 150 155 160
 Glu Gly Tyr Tyr Arg Leu Met Met Ser Leu Leu Lys Asp Asp Val Tyr
 165 170 175
 Cys Glu Leu Ala Glu Arg His Ile Gln Gln Ile Val Leu Phe His Gln
 180 185 190
 Ala Gly Glu Glu Gly Gly Lys Val Arg Arg Ile Thr Ser Glu Gly Gln
 195 200 205
 Ile Leu Glu Gln Pro Leu Asp Pro Ser Leu Ile Pro Lys Leu Met Ser
 210 215 220
 Phe Leu Lys Leu Glu Lys Gly Lys Phe Gly Met Val Leu Leu Lys Lys
 225 230 235 240
 Thr Leu Gln Val Glu Glu Arg Tyr Pro Tyr Pro Val Arg Leu Glu Ala
 245 250 255
 Met Tyr Glu Val Ile Asp Gln Gly Pro Ile Arg Arg Ile Glu Lys Ile
 260 265 270
 Arg Gln Lys Gly Phe Val Gln Lys Cys Lys Ala Ser Gly Val Glu Gly
 275 280 285
 Gln Val Val Ala Glu Gly Asn Asp Gly Gly Gly Gly Ala Gly Arg Pro
 290 295 300
 Ser Leu Gly Ser Glu Lys Lys Lys Glu Asp Pro Arg Arg Ala Gln Val
 305 310 315 320
 Pro Pro Thr Arg Glu Ser Arg Val Lys Val Leu Arg Lys Leu Ala Ala
 325 330 335
 Thr Ala Pro Ala Leu Pro Gln Pro Pro Ser Thr Pro Arg Ala Thr Thr
 340 345 350
 Leu Pro Pro Ala Pro Ala Thr Thr Val Thr Arg Ser Thr Ser Arg Ala
 355 360 365
 Val Thr Val Ala Ala Arg Pro Met Thr Thr Thr Ala Phe Pro Thr Thr
 370 375 380
 Gln Arg Pro Trp Thr Pro Ser Pro Ser His Arg Pro Pro Thr Thr Thr
 385 390 395 400
 Glu Val Ile Thr Ala Arg Arg Pro Ser Val Ser Glu Asn Leu Tyr Pro
 405 410 415
 Pro Ser Arg Lys Asp Gln His Arg Glu Arg Pro Gln Thr Thr Arg Arg
 420 425 430
 Pro Ser Lys Ala Thr Ser Leu Glu Ser Phe Thr Asn Ala Pro Pro Thr
 435 440 445
 Thr Ile Ser Glu Pro Ser Thr Arg Ala Ala Gly Pro Gly Arg Phe Arg
 450 455 460

Asp Asn Arg Met Asp Arg Arg Glu His Gly His Arg Asp Pro Asn Val
 465 470 475 480
 Val Pro Gly Pro Pro Lys Pro Ala Lys Glu Lys Pro Pro Lys Lys Lys
 485 490 495
 Ala Gln Asp Lys Ile Leu Ser Asn Glu Tyr Glu Glu Lys Tyr Asp Leu
 500 505 510
 Ser Arg Pro Thr Ala Ser Gln Leu Glu Asp Glu Leu Gln Val Gly Asn
 515 520 525
 Val Pro Leu Lys Lys Ala Lys Glu Ser Lys Lys His Glu Lys Leu Glu
 530 535 540
 Lys Pro Glu Lys Glu Lys Lys Lys Lys Met Lys Asn Glu Asn Ala Asp
 545 550 555 560
 Lys Leu Leu Lys Ser Glu Lys Gln Met Lys Lys Ser Glu Lys Lys Ser
 565 570 575
 Lys Gln Glu Lys Glu Lys Ser Lys Lys Lys Lys Gly Gly Lys Thr Glu
 580 585 590
 Gln Asp Gly Tyr Gln Lys Pro Thr Asn Lys His Phe Thr Gln Ser Pro
 595 600 605
 Lys Lys Ser Val Ala Asp Leu Leu Gly Ser Phe Glu Gly Lys Arg Arg
 610 615 620
 Leu Leu Leu Ile Thr Ala Pro Lys Ala Glu Asn Asn Met Tyr Val Gln
 625 630 635 640
 Gln Arg Asp Glu Tyr Leu Glu Ser Phe Cys Lys Met Ala Thr Arg Lys
 645 650 655
 Ile Ser Val Ile Thr Ile Phe Gly Pro Val Asn Asn Ser Thr Met Lys
 660 665 670
 Ile Asp His Phe Gln Leu Asp Asn Glu Lys Pro Met Arg Val Val Asp
 675 680 685
 Asp Glu Asp Leu Val Asp Gln Arg Leu Ile Ser Glu Leu Arg Lys Glu
 690 695 700
 Tyr Gly Met Thr Tyr Asn Asp Phe Phe Met Val Leu Thr Asp Val Asp
 705 710 715 720
 Leu Arg Val Lys Gln Tyr Tyr Glu Val Pro Ile Thr Met Lys Ser Val
 725 730 735
 Phe Asp Leu Ile Asp Thr Phe Gln Ser Arg Ile Lys Asp Met Glu Lys
 740 745 750
 Gln Lys Lys Glu Gly Ile Val Cys Lys Glu Asp Lys Lys Gln Ser Leu
 755 760 765
 Glu Asn Phe Leu Ser Arg Phe Arg Trp Arg Arg Arg Leu Leu Val Ile
 770 775 780
 Ser Ala Pro Asn Asp Glu Asp Trp Ala Tyr Ser Gln Gln Leu Ser Ala

785 790 795 800
 Leu Ser Gly Gln Ala Cys Asn Phe Gly Leu Arg His Ile Thr Ile Leu
 805 810 815
 Lys Leu Leu Gly Val Gly Glu Glu Val Gly Gly Val Leu Glu Leu Phe
 820 825 830
 Pro Ile Asn Gly Ser Ser Val Val Glu Arg Glu Asp Val Pro Ala His
 835 840 845
 Leu Val Lys Asp Ile Arg Asn Tyr Phe Gln Val Ser Pro Glu Tyr Phe
 850 855 860
 Ser Met Leu Leu Val Gly Lys Asp Gly Asn Val Lys Ser Trp Tyr Pro
 865 870 875 880
 Ser Pro Met Trp Ser Met Val Ile Val Tyr Asp Leu Ile Asp Ser Met
 885 890 895
 Gln Leu Arg Arg Gln Glu Met Ala Ile Gln Gln Ser Leu Gly Met Arg
 900 905 910
 Cys Pro Glu Asp Glu Tyr Ala Gly Tyr Gly Tyr His Ser Tyr His Gln
 915 920 925
 Gly Tyr Gln Asp Gly Tyr Gln Asp Asp Tyr Arg His His Glu Ser Tyr
 930 935 940
 His His Gly Tyr Pro Tyr
 945 950

<210> 452

<211> 260

<212> PRT

<213> Homo sapiens

<400> 452

Met Leu Ala Leu Leu Gly Leu Ser Gln Ala Leu Asn Ile Leu Leu Gly
 1 5 10 15
 Leu Lys Gly Leu Ala Pro Ala Glu Ile Ser Ala Val Cys Glu Lys Gly
 20 25 30
 Asn Phe Asn Val Ala His Gly Leu Ala Trp Ser Tyr Tyr Ile Gly Tyr
 35 40 45
 Leu Arg Leu Ile Leu Pro Glu Leu Gln Ala Arg Ile Arg Thr Tyr Asn
 50 55 60
 Gln His Tyr Asn Asn Leu Leu Arg Gly Ala Val Ser Gln Arg Leu Tyr
 65 70 75 80
 Ile Leu Leu Pro Leu Asp Cys Gly Val Pro Asp Asn Leu Ser Met Ala
 85 90 95
 Asp Pro Asn Ile Arg Phe Leu Asp Lys Leu Pro Gln Gln Thr Gly Asp
 100 105 110

Arg Ala Gly Ile Lys Asp Arg Val Tyr Ser Asn Ser Ile Tyr Glu Leu
 115 120 125
 Leu Glu Asn Gly Gln Arg Ala Gly Thr Cys Val Leu Glu Tyr Ala Thr
 130 135 140
 Pro Leu Gln Thr Leu Phe Ala Met Ser Gln Tyr Ser Gln Ala Gly Phe
 145 150 155 160
 Ser Gly Glu Asp Arg Leu Glu Gln Ala Lys Leu Phe Cys Arg Thr Leu
 165 170 175
 Glu Asp Ile Leu Ala Asp Ala Pro Glu Ser Gln Asn Asn Cys Arg Leu
 180 185 190
 Ile Ala Tyr Gln Glu Pro Ala Asp Asp Ser Ser Phe Ser Leu Ser Gln
 195 200 205
 Glu Val Leu Arg His Leu Arg Gln Glu Glu Lys Glu Glu Val Thr Val
 210 215 220
 Gly Ser Leu Lys Thr Ser Ala Val Pro Ser Thr Ser Thr Met Ser Gln
 225 230 235 240
 Glu Pro Glu Leu Leu Ile Ser Gly Met Glu Lys Pro Leu Pro Leu Arg
 245 250 255
 Thr Asp Phe Ser
 260

<210> 453
 <211> 35
 <212> PRT
 <213> Homo sapiens

<400> 453
 Met Pro Leu Pro Ser Ser Phe Pro Leu Pro Val Phe Leu Ser Ser Cys
 1 5 10 15
 Pro Phe Leu Met Ser Val Ser Ile Gly Phe Leu Ile Leu Val Phe Asn
 20 25 30
 Val His Pro
 35

<210> 454
 <211> 55
 <212> PRT
 <213> Homo sapiens

<400> 454
 Met Val Asn Ile Phe Gly Phe Val Ser Cys Ile Val Phe Arg Cys Ser
 1 5 10 15
 Cys Ser Ala Leu Leu His Glu Ser Asn His Arg Pro Tyr Leu Asn Lys
 20 25 30

Trp Ser Leu Leu Ser Thr Asn Lys Thr Leu Phe Arg Asn Asn Arg Gly
 35 40 45

Leu Asp Leu Val Leu Val Cys
 50 55

<210> 455

<211> 78

<212> PRT

<213> Homo sapiens

<400> 455

Met Val Cys Phe Gln Ser Asn Lys Pro Ser Thr Ser Thr Trp Arg Gln
 1 5 10 15

Leu Ser Phe Val Phe Val Leu Phe Cys Leu Phe Cys Leu Gly His Ala
 20 25 30

Phe Leu Ser Leu Pro Phe Tyr Ile Leu Ser Ile Ile Ala Met Cys Leu
 35 40 45

Glu Gln Trp Ala Phe His Asn Met Asn Ser Leu Tyr His His Glu Trp
 50 55 60

Glu Val Arg Gly Asn Leu Ile His Val Asp Phe Thr Leu Pro
 65 70 75

<210> 456

<211> 41

<212> PRT

<213> Homo sapiens

<400> 456

Met Asn Leu Met Val Arg Leu Leu Ala Leu Gly Leu Ile Ser Gly Met
 1 5 10 15

Met Ser Asn Ile Thr Gln Ser His Ser Ser Lys Ile Ser Ala Phe Gly
 20 25 30

Ile Phe Ile Gly Pro Glu Gln Phe Leu
 35 40

<210> 457

<211> 56

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (32)

<223> Xaa equals any amino acid

<400> 457

Met Leu Ser Phe Phe Ile Cys Leu Leu Ile Phe Val His Leu Leu Leu
 1 5 10 15

Leu Ser Phe Leu Ile Ser Asp Trp Pro Pro Pro Thr Gly Ser Ala Xaa
 20 25 30
 His Lys Ile Leu Arg Leu Met Val Val Gln Arg Leu Ser Leu Leu Asp
 35 40 45
 Gln Arg Lys Arg Trp Ser Glu Ala
 50 55

<210> 458
 <211> 90
 <212> PRT
 <213> Homo sapiens

<400> 458
 Met Ala Ile Arg Leu Val Phe Leu Ala Leu Ala Gly Leu Val Asp Gly
 1 5 10 15
 Lys Pro Val Trp Ile Thr Leu Trp Met Asp Ala Lys Arg Pro Asn Leu
 20 25 30
 Ala Gly Thr Gly Ser Thr Trp Gly Ser Arg Arg Asp Ser His Cys Cys
 35 40 45
 His Gly Pro Thr Ala Trp Ser Leu Pro Cys Leu Leu Cys Leu Phe Arg
 50 55 60
 Ala Gln Gln Lys Asp Arg Glu Arg Ser Leu Leu Gly Val Pro Leu Pro
 65 70 75 80
 Thr Leu Gln Gly Gly Asn Leu Ser Asp Gly
 85 90

<210> 459
 <211> 282
 <212> PRT
 <213> Homo sapiens

<400> 459
 Met Leu Ala Leu Thr Leu Ala Lys Ala Asp Ser Pro Arg Thr Ala Leu
 1 5 10 15
 Leu Cys Ser Ala Trp Leu Leu Thr Ala Ser Phe Ser Ala Gln Gln His
 20 25 30
 Lys Gly Ser Leu Gln Val His Gln Thr Leu Ser Val Glu Met Asp Gln
 35 40 45
 Val Leu Lys Ala Leu Ser Phe Pro Lys Lys Lys Ala Ala Leu Leu Ser
 50 55 60
 Ala Ala Ile Leu Cys Phe Leu Arg Thr Ala Leu Arg Gln Ser Phe Ser
 65 70 75 80
 Ser Ala Leu Val Ala Leu Val Pro Ser Gly Ala Gln Pro Leu Pro Ala
 85 90 95

Thr Lys Asp Thr Val Leu Ala Pro Leu Arg Met Ser Gln Val Arg Ser
 100 105 110
 Leu Val Ile Gly Leu Gln Asn Leu Leu Val Gln Lys Asp Pro Leu Leu
 115 120 125
 Ser Gln Ala Cys Val Gly Cys Leu Glu Ala Leu Leu Asp Tyr Leu Asp
 130 135 140
 Ala Arg Ser Pro Asp Ile Ala Leu His Val Ala Ser Gln Pro Trp Asn
 145 150 155 160
 Arg Phe Leu Leu Phe Thr Leu Leu Asp Ala Gly Glu Asn Ser Phe Leu
 165 170 175
 Arg Pro Glu Ile Leu Arg Leu Met Thr Leu Phe Met Arg Tyr Arg Ser
 180 185 190
 Ser Ser Val Leu Ser His Glu Glu Val Gly Asp Val Leu Gln Gly Val
 195 200 205
 Ala Leu Ala Asp Leu Ser Thr Leu Ser Asn Thr Thr Leu Gln Ala Leu
 210 215 220
 His Gly Phe Phe Gln Gln Leu Gln Ser Met Gly His Leu Ala Asp His
 225 230 235 240
 Ser Met Ala Gln Thr Leu Gln Ala Ser Leu Glu Gly Leu Pro Pro Ser
 245 250 255
 Thr Ser Ser Gly Gln Pro Pro Leu Gln Asp Met Leu Cys Leu Gly Gly
 260 265 270
 Val Ala Val Ser Leu Ser His Ile Arg Asn
 275 280

<210> 460

<211> 178

<212> PRT

<213> Homo sapiens

<400> 460

Met Leu Pro Leu Leu Ile Ile Cys Leu Leu Pro Ala Ile Glu Gly Lys
 1 5 10 15
 Asn Cys Leu Arg Cys Trp Pro Glu Leu Ser Ala Leu Ile Asp Tyr Asp
 20 25 30
 Leu Gln Ile Leu Trp Val Thr Pro Gly Pro Pro Thr Glu Leu Ser Gln
 35 40 45
 Ser Ile His Ser Leu Phe Leu Glu Asp Asn Asn Phe Leu Lys Pro Trp
 50 55 60
 Tyr Leu Asp Arg Asp His Leu Glu Glu Glu Thr Ala Lys Phe Phe Thr
 65 70 75 80
 Gln Val His Gln Ala Ile Lys Thr Leu Arg Asp Asp Lys Thr Val Leu

85 90 95
 Leu Glu Glu Ile Tyr Thr His Lys Asn Leu Phe Thr Glu Arg Leu Asn
 100 105 110
 Lys Ile Ser Asp Gly Leu Lys Glu Lys Gly Ala Pro Pro Leu Ser Met
 115 120 125
 Asn Ala Phe Pro Ala Pro Ser Pro Thr Cys Thr Pro Glu Pro Leu Gly
 130 135 140
 Ser Val Cys Leu Pro Ser Thr Ser Val Ser Leu Pro Ser His Pro Pro
 145 150 155 160
 Trp Gln Pro Ala Met Ser Pro Val Pro Gly Thr Gly Gly Pro Pro Cys
 165 170 175
 Gly Leu

<210> 461
 <211> 298
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (42)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (58)
 <223> Xaa equals any amino acid

<400> 461
 Met Ala Arg Arg Ser Arg His Arg Leu Leu Leu Leu Leu Arg Tyr
 1 5 10 15
 Leu Val Val Ala Leu Gly Tyr His Lys Ala Tyr Gly Phe Ser Ala Pro
 20 25 30
 Lys Asp Gln Gln Val Val Thr Ala Val Xaa Tyr Gln Glu Ala Ile Leu
 35 40 45
 Ala Cys Lys Thr Pro Lys Lys Thr Val Xaa Ser Arg Leu Glu Trp Lys
 50 55 60
 Lys Leu Gly Arg Ser Val Ser Phe Val Tyr Tyr Gln Gln Thr Leu Gln
 65 70 75 80
 Gly Asp Phe Lys Asn Arg Ala Glu Met Ile Asp Phe Asn Ile Arg Ile
 85 90 95
 Lys Asn Val Thr Arg Ser Asp Ala Gly Lys Tyr Arg Cys Glu Val Ser
 100 105 110
 Ala Pro Ser Glu Gln Gly Gln Asn Leu Glu Glu Asp Thr Val Thr Leu
 115 120 125

Glu Val Leu Val Ala Pro Ala Val Pro Ser Cys Glu Val Pro Ser Ser
 130 135 140
 Ala Leu Ser Gly Thr Val Val Glu Leu Arg Cys Gln Asp Lys Glu Gly
 145 150 155 160
 Asn Pro Ala Pro Glu Tyr Thr Trp Phe Lys Asp Gly Ile Arg Leu Leu
 165 170 175
 Glu Asn Pro Arg Leu Gly Ser Gln Ser Thr Asn Ser Ser Tyr Thr Met
 180 185 190
 Asn Thr Lys Thr Gly Thr Leu Gln Phe Asn Thr Val Ser Lys Leu Asp
 195 200 205
 Thr Gly Glu Tyr Ser Cys Glu Ala Arg Asn Ser Val Gly Tyr Arg Arg
 210 215 220
 Cys Pro Gly Lys Arg Met Gln Val Asp Asp Leu Asn Ile Ser Gly Ile
 225 230 235 240
 Ile Ala Ala Val Val Val Val Ala Leu Val Ile Ser Val Cys Gly Leu
 245 250 255
 Gly Val Cys Tyr Ala Gln Arg Lys Gly Tyr Phe Ser Lys Glu Thr Ser
 260 265 270
 Phe Gln Lys Ser Asn Ser Ser Ser Lys Ala Thr Thr Met Ser Glu Asn
 275 280 285
 Asp Phe Lys His Thr Lys Ser Phe Ile Ile
 290 295

<210> 462
 <211> 46
 <212> PRT
 <213> Homo sapiens

<400> 462
 Met Glu Pro Val Ala Leu Leu Gln Pro Thr Trp Trp Leu Leu Asn Val
 1 5 10 15
 Thr Leu Pro Leu Val Ala Trp Ser Gly Pro Leu Ile Cys Arg Pro Leu
 20 25 30
 Leu His Gly Glu Gly Arg Gln Gly Ala Ala Cys Leu Gln Gly
 35 40 45

<210> 463
 <211> 44
 <212> PRT
 <213> Homo sapiens

<400> 463
 Met Gly Trp Leu Trp Leu Glu Leu Leu Gly Leu Ser Ile Glu Glu Thr
 1 5 10 15

Leu Val Trp Ala Phe Leu Asn Lys Phe Leu Asp Ser Ser Ala Ala Leu
 20 25 30

Leu Trp Arg Ile Leu Gly Lys Ser Asn Leu Ser Thr
 35 40

<210> 464

<211> 158

<212> PRT

<213> Homo sapiens

<400> 464

Met Ala Leu Glu Val Leu Met Leu Leu Ala Val Leu Ile Trp Thr Gly
 1 5 10 15

Ala Glu Asn Leu His Val Lys Ile Ser Cys Ser Leu Asp Trp Leu Met
 20 25 30

Val Ser Val Ile Pro Val Ala Glu Ser Arg Asn Leu Tyr Ile Phe Ala
 35 40 45

Asp Glu Leu His Leu Gly Met Gly Cys Pro Ala Asn Arg Ile His Thr
 50 55 60

Tyr Val Tyr Glu Phe Ile Tyr Leu Val Arg Asp Cys Gly Ile Arg Thr
 65 70 75 80

Arg Val Val Ser Glu Glu Thr Leu Leu Phe Gln Thr Glu Leu Tyr Phe
 85 90 95

Thr Pro Arg Asn Ile Asp His Asp Pro Gln Glu Ile His Leu Glu Cys
 100 105 110

Ser Thr Ser Arg Lys Ser Val Trp Leu Thr Pro Val Ser Thr Glu Asn
 115 120 125

Glu Ile Lys Leu Asp Pro Ser Pro Phe Ile Ala Asp Phe Gln Thr Thr
 130 135 140

Ala Glu Glu Leu Gly Leu Leu Ser Ser Ser Pro Asn Leu Leu
 145 150 155

<210> 465

<211> 101

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (67)

<223> Xaa equals any amino acid

<400> 465

Met Glu Leu Glu Arg Cys Ser Val Val Leu Cys Ile Leu Ala Asn Leu
 1 5 10 15

Ala Val Leu Arg Ala Leu Phe Leu Pro Cys Ile Ile Phe His Cys Val
 20 25 30

Ser Asp Ser Arg Ser Val Asn Arg Glu Thr Lys Val Lys Phe Val His
 35 40 45

Thr Ser Val His Gly Val Gly His Ser Phe Val Gln Ser Ala Phe Lys
 50 55 60

Ala Phe Xaa Leu Val Pro Pro Glu Ala Val Pro Glu Gln Lys Asp Pro
 65 70 75 80

Asp Pro Glu Phe Pro Thr Val Lys Tyr Pro Asn Pro Glu Glu Gly Lys
 85 90 95

Gly Val Leu Val Thr
 100

<210> 466
 <211> 71
 <212> PRT
 <213> Homo sapiens

<400> 466
 Met Val Gln Gly Pro Leu Thr His Leu Met Leu Val Leu Leu Ile Ser
 1 5 10 15

Leu Ile Phe Leu Ser Arg Gly Ser Gly Arg Ala Trp Ala Phe Ser His
 20 25 30

Ser Cys Phe Lys Thr Ser Asp Leu Leu Pro Cys Arg Asn Arg Trp Glu
 35 40 45

Val Ile Glu Phe Leu His Tyr Ser Asn Leu His Ser His Ile Ser Leu
 50 55 60

Ser Val Thr Lys Thr Phe Leu
 65 70

<210> 467
 <211> 230
 <212> PRT
 <213> Homo sapiens

<400> 467
 Met Ala Ser Leu Gly Leu Gln Leu Val Gly Tyr Ile Leu Gly Leu Leu
 1 5 10 15

Gly Leu Leu Gly Thr Leu Val Ala Met Leu Leu Pro Ser Trp Lys Thr
 20 25 30

Ser Ser Tyr Val Gly Ala Ser Ile Val Thr Ala Val Gly Phe Ser Lys
 35 40 45

Gly Leu Trp Met Glu Cys Ala Thr His Ser Thr Gly Ile Thr Gln Cys
 50 55 60

Asp Ile Tyr Ser Thr Leu Leu Gly Leu Pro Ala Asp Ile Gln Ala Ala
 65 70 75 80
 Gln Ala Met Met Val Thr Ser Ser Ala Ile Ser Ser Leu Ala Cys Ile
 85 90 95
 Ile Ser Val Val Gly Met Arg Cys Thr Val Phe Cys Gln Glu Ser Arg
 100 105 110
 Ala Lys Asp Arg Val Ala Val Ala Gly Gly Val Phe Phe Ile Leu Gly
 115 120 125
 Gly Leu Leu Gly Phe Ile Pro Val Ala Trp Asn Leu His Gly Ile Leu
 130 135 140
 Arg Asp Phe Tyr Ser Pro Leu Val Pro Asp Ser Met Lys Phe Glu Ile
 145 150 155 160
 Gly Glu Ala Leu Tyr Leu Gly Ile Ile Ser Ser Leu Phe Ser Leu Ile
 165 170 175
 Ala Gly Ile Ile Leu Cys Phe Ser Cys Ser Ser Gln Arg Asn Arg Ser
 180 185 190
 Asn Tyr Tyr Asp Ala Tyr Gln Ala Gln Pro Leu Ala Thr Arg Ser Ser
 195 200 205
 Pro Arg Pro Gly Gln Pro Pro Lys Val Lys Ser Glu Phe Asn Ser Tyr
 210 215 220
 Ser Leu Thr Gly Tyr Val
 225 230

<210> 468
 <211> 37
 <212> PRT
 <213> Homo sapiens

<400> 468
 Met Cys Tyr Ile Pro Gly Ser Thr Gly Gly Gln Cys Trp Pro Trp Cys
 1 5 10 15
 Trp Cys Trp Leu Cys Arg Glu Ala Leu Glu Trp Leu Cys Gly Ala Val
 20 25 30
 Ser Ala Gly Pro Ala
 35

<210> 469
 <211> 133
 <212> PRT
 <213> Homo sapiens

<400> 469
 Met Arg Val Pro Leu Val Leu Ser Trp Ala Phe Val Leu Val Gly Phe
 1 5 10 15

Ser Gly Val Tyr Leu Ala Ser Glu Ser Phe Trp Phe Pro Pro Ser Leu
 20 25 30
 Cys Asp Leu Thr Ser Pro Pro Gly Leu His Leu Trp Lys Phe Ile Arg
 35 40 45
 Asp Leu Val Ser Met Glu Glu Leu Thr Asp Ser Ala Arg Glu Met Gly
 50 55 60
 Tyr Trp Met Met Val Phe Ser Leu Lys Ala Met Phe Pro Val Ser Ser
 65 70 75 80
 Gly Cys Phe Gln Glu Arg Gln Glu Thr Asn Lys Ser Leu Thr Leu Leu
 85 90 95
 Arg Cys Ser Gln Arg Asp Thr Ser Pro Leu Met Asp Gly Gln Thr Trp
 100 105 110
 Ala Arg Val Arg Val Thr Lys Pro Pro Thr Thr Ala Thr Ala Ala Tyr
 115 120 125
 Asn Arg His Ile Arg
 130

<210> 470
 <211> 42
 <212> PRT
 <213> Homo sapiens

<400> 470
 Met Phe Leu Phe Ile Thr Phe Thr Ile Leu Ala Ile Phe Ile Ile Glu
 1 5 10 15
 Pro Arg Asn Leu Arg Val Asp Leu Asn Leu Ile Lys Phe Gln Thr Ser
 20 25 30
 Trp Pro Lys Thr Leu Val Glu Glu Gln Asn
 35 40

<210> 471
 <211> 56
 <212> PRT
 <213> Homo sapiens

<400> 471
 Met Phe Leu Lys Val Leu Val Phe Leu Ile Phe Phe Ser Pro Phe Ser
 1 5 10 15
 Ser Ser Leu Phe Ser Gly Glu Ala Val Arg Gly Arg Gly Ala Gly Leu
 20 25 30
 Gly Leu Gly Ile Gly Arg Gly Trp Thr Ser Cys Leu Ser Val Leu Asn
 35 40 45
 Gly Cys Asp Gly Ala Arg Ser His
 50 55

<210> 472
 <211> 52
 <212> PRT
 <213> Homo sapiens

<400> 472
 Met Gly Pro Cys Arg Ala Ser Arg Cys Leu Ser Leu Leu Val Leu Phe
 1 5 10 15
 Pro Pro Gly Val Ala Gly Arg Pro Ala Pro Gly Arg Leu His Pro Val
 20 25 30
 Pro Thr Gly Pro Leu Pro Arg Met Tyr Ser Ala Gly Ala Arg Gly Arg
 35 40 45
 His Gly Ala His
 50

<210> 473
 <211> 50
 <212> PRT
 <213> Homo sapiens

<400> 473
 Met Asp Gly Gly Pro Gly Ala Phe Ser Arg Ala Trp Val Leu Gln Ile
 1 5 10 15
 Pro Trp Leu Leu Leu Ser Gly Gly Asn Phe Ala Leu Cys Glu Pro Arg
 20 25 30
 Pro Cys Pro Ser Ala Gly His Pro Trp Gln Glu Ala Gly Leu Pro Ser
 35 40 45
 Ser Pro
 50

<210> 474
 <211> 45
 <212> PRT
 <213> Homo sapiens

<400> 474
 Met Leu Val Ser Leu Ile Ile Cys Leu Leu Leu Asp Leu Leu Asn Gln
 1 5 10 15
 Pro Ser Leu Leu Arg Asp Leu Ile Leu Lys Gln His Thr Gly Asn Pro
 20 25 30
 His Leu Ser Phe Pro Leu Lys Tyr Ser His Trp Met Gly
 35 40 45

<210> 475
 <211> 168

<212> PRT

<213> Homo sapiens

<400> 475

```

Met Val Thr Phe Ile Thr Ala Thr Leu Trp Ile Ala Val Phe Ser Tyr
 1             5             10             15

Ile Met Val Trp Leu Val Thr Ile Ile Gly Tyr Thr Leu Gly Ile Pro
          20             25             30

Asp Val Ile Met Gly Ile Thr Phe Leu Ala Ala Gly Gln Val Ser Arg
          35             40             45

Leu His Gly Gln Pro Asn Cys Gly Glu Thr Arg Pro Trp Gly His Gly
          50             55             60

Ser Leu Gln His His Arg Ser Asn Val Phe Asp Ile Leu Val Gly Leu
          65             70             75             80

Gly Val Pro Trp Gly Leu Gln Thr Met Val Val Asn Tyr Gly Ser Thr
          85             90             95

Val Lys Ile Asn Ser Arg Gly Leu Val Tyr Ser Val Val Leu Leu Leu
          100             105             110

Gly Ser Val Ala Leu Thr Val Leu Gly Ile His Leu Asn Lys Trp Arg
          115             120             125

Leu Asp Arg Lys Leu Gly Val Tyr Val Leu Val Leu Tyr Ala Ile Phe
          130             135             140

Leu Cys Phe Ser Ile Met Ile Glu Phe Asn Val Phe Thr Phe Val Asn
          145             150             155             160

Leu Pro Met Cys Arg Glu Asp Asp
          165

```

<210> 476

<211> 43

<212> PRT

<213> Homo sapiens

<400> 476

```

Met Asn Leu Ile Phe Arg Leu Pro Cys Ile Leu Leu Thr Cys Ile Tyr
 1             5             10             15

Val Gln Gln Cys Val Cys Lys Tyr Ile Gly Thr Phe Leu Asn Arg Val
          20             25             30

Cys Ala Met Cys Lys Gly Leu Leu Thr Val Lys
          35             40

```

<210> 477

<211> 52

<212> PRT

<213> Homo sapiens

<400> 477

Met Lys Cys Phe Phe Leu Phe Val Val Ile Leu Ile Ile Met Lys Ser
 1 5 10 15

Asn Leu Ser Asp Ile Ile Ile Ala Thr Tyr Thr Tyr Cys Ile Pro Asp
 20 25 30

Tyr Phe Phe His Thr Phe Ile Phe Asn Leu Ser Val Tyr Leu Asn Ser
 35 40 45

Lys Phe Ile Ser
 50

<210> 478

<211> 51

<212> PRT

<213> Homo sapiens

<400> 478

Met Ile Lys His Val Ala Trp Leu Ile Phe Thr Asn Cys Ile Phe Phe
 1 5 10 15

Cys Pro Val Ala Phe Phe Ser Phe Ala Pro Leu Ile Thr Ala Ile Ser
 20 25 30

Ile Ser Pro Glu Ile Met Lys Ser Val Thr Leu Ile Phe Phe Pro Cys
 35 40 45

Leu Leu Ala
 50

<210> 479

<211> 118

<212> PRT

<213> Homo sapiens

<400> 479

Met Cys Tyr Leu Leu Leu Leu Ile Gln Thr Ala Glu Leu Leu Ile
 1 5 10 15

His Pro Gln Gly Leu Gln Ala Val Ser Asn Gly Glu Ser Ala Leu Lys
 20 25 30

Gly Thr Arg Pro Thr Phe Ser Ser Pro Phe Ile Leu Val Thr Glu Gly
 35 40 45

Arg Lys Glu Trp Glu Gly Val Phe Leu Ser Ser Gly Trp Lys Gly Asn
 50 55 60

Thr Leu Ser Asn Tyr Tyr Ile Ser Leu Val Phe Tyr Tyr Ser Arg Ile
 65 70 75 80

Leu Gln Pro Tyr Phe Tyr Cys Leu Trp Gly Lys Leu Glu Met Val Thr
 85 90 95

Leu Ile Arg Ser Val Trp Arg Gly Ile Asn Gly Gly Asp Lys Ile Ser
 100 105 110

Val Gly Phe Gly Lys Cys
115

<210> 480
<211> 169
<212> PRT
<213> Homo sapiens

<400> 480
Met Trp Ala Val Leu Arg Leu Ala Leu Arg Pro Cys Ala Arg Ala Ser
1 5 10 15
Pro Ala Gly Pro Arg Ala Tyr His Gly Asp Ser Val Ala Ser Leu Gly
20 25 30
Thr Gln Pro Asp Leu Gly Ser Ala Leu Tyr Gln Glu Asn Tyr Lys Gln
35 40 45
Met Lys Ala Leu Val Asn Gln Leu His Glu Arg Val Glu His Ile Lys
50 55 60
Leu Gly Gly Gly Glu Lys Ala Arg Ala Leu His Ile Ser Arg Gly Lys
65 70 75 80
Leu Leu Pro Arg Glu Arg Ile Asp Asn Leu Ile Asp Pro Gly Ser Pro
85 90 95
Phe Leu Glu Leu Ser Gln Phe Ala Gly Tyr Gln Leu Tyr Asp Asn Glu
100 105 110
Glu Val Pro Gly Gly Gly Ile Ile Thr Gly Ile Gly Arg Val Ser Gly
115 120 125
Val Glu Cys Met Ile Ile Ala Asn Asp Ala Thr Val Lys Gly Gly Ala
130 135 140
Tyr Tyr Pro Val Thr Val Lys Lys Gln Leu Arg Ala Gln Glu Ile Ala
145 150 155 160
Met Gln Thr Gly Ser Pro Ala Ser Thr
165

<210> 481
<211> 47
<212> PRT
<213> Homo sapiens

<400> 481
Met Thr Ala Gly Phe Met Gly Met Ala Val Ala Ile Ile Leu Phe Gly
1 5 10 15
Trp Ile Ile Gly Val Leu Gly Cys Cys Trp Asp Arg Gly Leu Met Gln
20 25 30
Tyr Val Ala Gly Cys Ser Ser Ser Trp Glu Gly Lys Gln Trp Asn
35 40 45

<210> 482
 <211> 203
 <212> PRT
 <213> Homo sapiens

<400> 482
 Met Gln Leu Gly Ser Val Leu Leu Thr Arg Cys Pro Phe Trp Gly Cys
 1 5 10 15
 Phe Ser Gln Leu Met Leu Tyr Ala Glu Arg Ala Glu Ala Arg Arg Lys
 20 25 30
 Pro Asp Ile Pro Val Pro Tyr Leu Tyr Phe Asp Met Gly Ala Ala Val
 35 40 45
 Leu Cys Ala Ser Phe Met Ser Phe Gly Val Lys Arg Arg Trp Phe Ala
 50 55 60
 Leu Gly Ala Ala Leu Gln Leu Ala Ile Ser Thr Tyr Ala Ala Tyr Ile
 65 70 75 80
 Gly Gly Tyr Val His Tyr Gly Asp Trp Leu Lys Val Arg Met Tyr Ser
 85 90 95
 Arg Thr Val Ala Ile Ile Gly Gly Phe Leu Val Leu Ala Ser Gly Ala
 100 105 110
 Gly Glu Leu Tyr Arg Arg Lys Pro Arg Ser Arg Ser Leu Gln Ser Thr
 115 120 125
 Gly Gln Val Phe Leu Gly Ile Tyr Leu Ile Cys Val Ala Tyr Ser Leu
 130 135 140
 Gln His Ser Lys Glu Asp Arg Leu Ala Tyr Leu Asn His Leu Pro Gly
 145 150 155 160
 Gly Glu Leu Met Ile Gln Leu Phe Phe Val Leu Tyr Gly Ile Leu Ala
 165 170 175
 Pro Gly Leu Ser Val Arg Leu Leu Arg Asp Pro Arg Cys Pro Asp Pro
 180 185 190
 Gly Cys Thr Ala Ala Pro Cys His Ala Ala His
 195 200

<210> 483
 <211> 123
 <212> PRT
 <213> Homo sapiens

<400> 483
 Met His Asp Gly Ser Lys Pro Phe Pro Arg Tyr Gly Tyr Lys Pro Ser
 1 5 10 15
 Pro Pro Asn Gly Cys Gly Ser Pro Leu Phe Gly Val His Leu Asn Ile
 20 25 30

Gly Ile Pro Ser Leu Thr Lys Cys Cys Asn Gln His Asp Arg Cys Tyr
 35 40 45
 Glu Thr Cys Gly Lys Ser Lys Asn Asp Cys Asp Glu Glu Phe Gln Tyr
 50 55 60
 Cys Leu Ser Lys Ile Cys Arg Asp Val Gln Lys Thr Leu Gly Leu Thr
 65 70 75 80
 Gln His Val Gln Ala Cys Glu Thr Thr Val Glu Leu Leu Phe Asp Ser
 85 90 95
 Val Ile His Leu Gly Cys Lys Pro Tyr Leu Asp Ser Gln Arg Ala Ala
 100 105 110
 Cys Arg Cys His Tyr Glu Glu Lys Thr Asp Leu
 115 120

<210> 484
 <211> 23
 <212> PRT
 <213> Homo sapiens

<400> 484
 Leu Gly Ser Leu Ser Thr Ala Pro Ser Ser Ala Leu Pro Thr Leu Gly
 1 5 10 15
 Ala Arg Arg Thr Arg Ser Lys
 20

<210> 485
 <211> 60
 <212> PRT
 <213> Homo sapiens

<400> 485
 Met Gly Asn Cys Gln Ala Gly His Asn Leu His Leu Cys Leu Ala His
 1 5 10 15
 His Pro Pro Leu Val Cys Ala Thr Leu Ile Leu Leu Leu Gly Leu
 20 25 30
 Ser Gly Leu Gly Leu Gly Ser Phe Leu Leu Thr His Arg Thr Gly Leu
 35 40 45
 Arg Thr Leu Thr Ser Pro Arg Thr Gly Ser Leu Phe
 50 55 60

<210> 486
 <211> 173
 <212> PRT
 <213> Homo sapiens

<400> 486

Met Glu Ala Pro Gly Pro Arg Ala Leu Arg Thr Ala Leu Cys Gly Gly
 1 5 10 15
 Cys Cys Cys Leu Leu Leu Cys Ala Gln Leu Ala Val Ala Gly Lys Gly
 20 25 30
 Ala Arg Gly Phe Gly Arg Gly Ala Leu Ile Arg Leu Asn Ile Trp Pro
 35 40 45
 Ala Val Gln Gly Ala Cys Lys Gln Leu Glu Val Cys Glu His Cys Val
 50 55 60
 Glu Gly Asp Arg Ala Arg Asn Leu Ser Ser Cys Met Trp Glu Gln Cys
 65 70 75 80
 Arg Pro Glu Glu Pro Gly His Cys Val Ala Gln Ser Glu Val Val Lys
 85 90 95
 Glu Gly Cys Ser Ile Tyr Asn Arg Ser Glu Ala Cys Pro Ala Ala His
 100 105 110
 His His Pro Thr Tyr Glu Pro Lys Thr Val Thr Thr Gly Ser Pro Pro
 115 120 125
 Val Pro Glu Ala His Ser Pro Gly Phe Asp Gly Ala Ser Phe Ile Gly
 130 135 140
 Gly Val Val Leu Val Leu Ser Leu Gln Ala Val Ala Phe Phe Val Leu
 145 150 155 160
 His Phe Leu Lys Ala Lys Asp Ser Thr Tyr Gln Thr Leu
 165 170

<210> 487

<211> 210

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (139)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (187)

<223> Xaa equals any amino acid

<400> 487

Met Glu Ala Pro Gly Pro Arg Ala Leu Arg Thr Ala Leu Cys Gly Gly
 1 5 10 15
 Cys Cys Cys Leu Leu Leu Cys Ala Gln Leu Ala Val Ala Gly Lys Gly
 20 25 30
 Ala Arg Gly Phe Gly Arg Gly Ala Leu Ile Arg Leu Asn Ile Trp Pro
 35 40 45
 Ala Val Gln Gly Ala Cys Lys Gln Leu Glu Val Cys Glu His Cys Val

50 55 60
 Glu Gly Asp Arg Ala Arg Asn Leu Ser Ser Cys Met Trp Glu Gln Cys
 65 70 75 80
 Arg Pro Glu Glu Pro Gly His Cys Val Ala Gln Ser Glu Val Val Lys
 85 90 95
 Glu Gly Cys Ser Ile Tyr Asn Arg Ser Glu Ala Cys Pro Ala Ala His
 100 105 110
 His His Pro Thr Tyr Glu Pro Lys Thr Val Thr Thr Gly Ser Pro Pro
 115 120 125
 Val Pro Glu Ala His Ser Pro Gly Phe Asp Xaa Ala Ser Phe Ile Gly
 130 135 140
 Gly Val Val Leu Val Leu Ser Leu Gln Ala Val Ala Phe Phe Val Leu
 145 150 155 160
 Thr Ser Ser Arg Pro Arg Thr Ala Pro Thr Arg Arg Cys Glu Tyr Leu
 165 170 175
 Ala Ser Ser Lys Tyr Leu Ser Pro Ser Ser Xaa Leu Val Pro Ala His
 180 185 190
 Val Pro Phe Ser Thr Gln Gly Ala Val Phe Ser Thr Gly Lys Pro Ser
 195 200 205
 Gly Arg
 210

<210> 488

<211> 105

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (70)

<223> Xaa equals any amino acid

<400> 488

Met Ile Ser Tyr Ile Val Leu Leu Ser Ile Leu Leu Trp Pro Leu Val
 1 5 10 15
 Val Tyr His Glu Leu Ile Gln Arg Met Tyr Thr Arg Leu Glu Pro Leu
 20 25 30
 Leu Met Gln Leu Asp Tyr Ser Met Lys Ala Glu Ala Asn Ala Leu His
 35 40 45
 His Lys His Asp Lys Arg Lys Arg Gln Gly Lys Asn Ala Pro Pro Gly
 50 55 60
 Gly Asp Glu Pro Leu Xaa Glu Thr Glu Ser Glu Ser Glu Ala Glu Leu
 65 70 75 80
 Ala Gly Phe Ser Pro Val Val Asp Val Lys Lys Thr Ala Leu Ala Leu

85 90 95

Ala Ile Tyr Arg Leu Arg Ala Val Arg
100 105

<210> 489
<211> 89
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (24)
<223> Xaa equals any amino acid

<220>
<221> SITE
<222> (75)
<223> Xaa equals any amino acid

<400> 489
Met Phe Lys Asp Tyr Pro Pro Ala Ile Lys Pro Ser Tyr Asp Val Leu
1 5 10 15
Leu Leu Leu Leu Leu Leu Val Xaa Leu Leu Gln Ala Gly Leu Asn Thr
20 25 30
Gly Thr Ala Ile Gln Cys Val Arg Phe Lys Val Ser Ala Arg Leu Gln
35 40 45
Gly Ala Ser Trp Asp Thr Gln Asn Gly Pro Gln Glu Arg Leu Ala Gly
50 55 60
Glu Val Ala Arg Ser Pro Leu Lys Glu Phe Xaa Lys Glu Lys Ala Trp
65 70 75 80
Arg Ala Val Val Val Gln Met Ala Gln
85

<210> 490
<211> 127
<212> PRT
<213> Homo sapiens

<400> 490
Met Gly Gln Val Trp Arg Val Pro Pro Leu Leu Leu Ser Val Gln Val
1 5 10 15
Phe Leu Thr Met Ala His Ala Phe His Gln Ala Pro Glu Leu Gln Trp
20 25 30
Leu Gly Leu Trp Phe Trp Val Arg Leu Phe Ala Gly Gly Asp Gly Gly
35 40 45
Leu His Leu Asn Ile Ser Ser Val Thr Leu Pro Leu Leu His Gly Lys
50 55 60

Gln Leu Ser Arg Glu Val Pro Ser Cys Gln Gly Lys Pro Arg Leu Gly
 65 70 75 80

Arg Pro Pro Tyr Lys Glu Pro Gln Asp Cys Ser His Gly Cys His Leu
 85 90 95

Ser Trp Lys Gly Arg Phe Met Gly Phe Pro Gly Thr Pro Arg Leu Ser
 100 105 110

Trp Pro Arg Gly Lys Arg Trp Leu Leu Gln Glu Phe Asp Leu Ser
 115 120 125

<210> 491
 <211> 9
 <212> PRT
 <213> Homo sapiens

<400> 491
 Leu Gly Lys Pro Trp Arg Tyr Pro Thr
 1 5

<210> 492
 <211> 91
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (84)
 <223> Xaa equals any amino acid

<400> 492
 Met Tyr Gly Lys Ser Ser Thr Arg Ala Val Leu Leu Leu Gly Ile
 1 5 10 15

Gln Leu Thr Ala Leu Trp Pro Ile Ala Ala Val Glu Ile Tyr Thr Ser
 20 25 30

Arg Val Leu Glu Ala Val Asn Gly Thr Asp Ala Arg Leu Lys Cys Thr
 35 40 45

Phe Ser Ser Phe Ala Pro Val Gly Asp Ala Leu Thr Val Thr Trp Asn
 50 55 60

Phe Arg Pro Leu Asp Gly Gly Pro Glu Gln Phe Val Phe Tyr Tyr His
 65 70 75 80

Ile Asp Pro Xaa Pro Thr His Glu Trp Ala Val
 85 90

<210> 493
 <211> 941
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (807)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (809)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (815)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (819)
 <223> Xaa equals any amino acid

<400> 493

Met	Val	Phe	Leu	Pro	Leu	Lys	Trp	Ser	Leu	Ala	Thr	Met	Ser	Phe	Leu
1				5					10					15	
Leu	Ser	Ser	Leu	Leu	Ala	Leu	Leu	Thr	Val	Ser	Thr	Pro	Ser	Trp	Cys
			20					25					30		
Gln	Ser	Thr	Glu	Ala	Ser	Pro	Lys	Arg	Ser	Asp	Gly	Thr	Pro	Phe	Pro
		35					40					45			
Trp	Asn	Lys	Ile	Arg	Leu	Pro	Glu	Tyr	Val	Ile	Pro	Val	His	Tyr	Asp
	50					55					60				
Leu	Leu	Ile	His	Ala	Asn	Leu	Thr	Thr	Leu	Thr	Phe	Trp	Gly	Thr	Thr
	65				70					75					80
Lys	Val	Glu	Ile	Thr	Ala	Ser	Gln	Pro	Thr	Ser	Thr	Ile	Ile	Leu	His
				85					90					95	
Ser	His	His	Leu	Gln	Ile	Ser	Arg	Ala	Thr	Leu	Arg	Lys	Gly	Ala	Gly
			100					105					110		
Glu	Arg	Leu	Ser	Glu	Glu	Pro	Leu	Gln	Val	Leu	Glu	His	Pro	Pro	Gln
		115					120					125			
Glu	Gln	Ile	Ala	Leu	Leu	Ala	Pro	Glu	Pro	Leu	Leu	Val	Gly	Leu	Pro
	130					135						140			
Tyr	Thr	Val	Val	Ile	His	Tyr	Ala	Gly	Asn	Leu	Ser	Glu	Thr	Phe	His
	145				150					155					160
Gly	Phe	Tyr	Lys	Ser	Thr	Tyr	Arg	Thr	Lys	Glu	Gly	Glu	Leu	Arg	Ile
			165						170					175	
Leu	Ala	Ser	Thr	Gln	Phe	Glu	Pro	Thr	Ala	Ala	Arg	Met	Ala	Phe	Pro
			180					185					190		
Cys	Phe	Asp	Glu	Pro	Ala	Phe	Lys	Ala	Ser	Phe	Ser	Ile	Lys	Ile	Arg
		195					200					205			
Arg	Glu	Pro	Arg	His	Leu	Ala	Ile	Ser	Asn	Met	Pro	Leu	Val	Lys	Ser

210	215	220
Val Thr Val Ala Glu Gly Leu Ile Glu Asp His Phe Asp Val Thr Val		
225	230	240
Lys Met Ser Thr Tyr Leu Val Ala Phe Ile Ile Ser Asp Phe Glu Ser		
	245	255
Val Ser Lys Ile Thr Lys Ser Gly Val Lys Val Ser Val Tyr Ala Val		
	260	270
Pro Asp Lys Met Asn Gln Ala Asp Tyr Ala Leu Asp Ala Ala Val Thr		
	275	285
Leu Leu Glu Phe Tyr Glu Asp Tyr Phe Ser Ile Pro Tyr Pro Leu Pro		
	290	300
Lys Gln Asp Leu Ala Ala Ile Pro Asp Phe Gln Ser Gly Ala Met Glu		
305	310	320
Asn Trp Gly Leu Thr Thr Tyr Arg Glu Ser Ala Leu Leu Phe Asp Ala		
	325	335
Glu Lys Ser Ser Ala Ser Ser Lys Leu Gly Ile Thr Met Thr Val Ala		
	340	350
His Glu Leu Ala His Gln Trp Phe Gly Asn Leu Val Thr Met Glu Trp		
	355	365
Trp Asn Asp Leu Trp Leu Asn Glu Gly Phe Ala Lys Phe Met Glu Phe		
	370	380
Val Ser Val Ser Val Thr His Pro Glu Leu Lys Val Gly Asp Tyr Phe		
385	390	400
Phe Gly Lys Cys Phe Asp Ala Met Glu Val Asp Ala Leu Asn Ser Ser		
	405	415
His Pro Val Ser Thr Pro Val Glu Asn Pro Ala Gln Ile Arg Glu Met		
	420	430
Phe Asp Asp Val Ser Tyr Asp Lys Gly Ala Cys Ile Leu Asn Met Leu		
	435	445
Arg Glu Tyr Leu Ser Ala Asp Ala Phe Lys Ser Gly Ile Val Gln Tyr		
	450	460
Leu Gln Lys His Ser Tyr Lys Asn Thr Lys Asn Glu Asp Leu Trp Asp		
465	470	480
Ser Met Ala Ser Ile Cys Pro Thr Asp Gly Val Lys Gly Met Asp Gly		
	485	495
Phe Cys Ser Arg Ser Gln His Ser Ser Ser Ser Ser His Trp His Gln		
	500	510
Glu Gly Val Asp Val Lys Thr Met Met Asn Thr Trp Thr Leu Gln Arg		
	515	525
Gly Phe Pro Leu Ile Thr Ile Thr Val Arg Gly Arg Asn Val His Met		
530	535	540

Lys Gln Glu His Tyr Met Lys Gly Ser Asp Gly Ala Pro Asp Thr Gly
 545 550 555 560
 Tyr Leu Trp His Val Pro Leu Thr Phe Ile Thr Ser Lys Ser Asp Met
 565 570 575
 Val His Arg Phe Leu Leu Lys Thr Lys Thr Asp Val Leu Ile Leu Pro
 580 585 590
 Glu Glu Val Glu Trp Ile Lys Phe Asn Val Gly Met Asn Gly Tyr Tyr
 595 600 605
 Ile Val His Tyr Glu Asp Asp Gly Trp Asp Ser Leu Thr Gly Leu Leu
 610 615 620
 Lys Gly Thr His Thr Ala Val Ser Ser Asn Asp Arg Ala Ser Leu Ile
 625 630 635 640
 Asn Asn Ala Phe Gln Leu Val Ser Ile Gly Lys Leu Ser Ile Glu Lys
 645 650 655
 Ala Leu Asp Leu Ser Leu Tyr Leu Lys His Glu Thr Glu Ile Met Pro
 660 665 670
 Val Phe Gln Gly Leu Asn Glu Leu Ile Pro Met Tyr Lys Leu Met Glu
 675 680 685
 Lys Arg Asp Met Asn Glu Val Glu Thr Gln Phe Lys Ala Phe Leu Ile
 690 695 700
 Arg Leu Leu Arg Asp Leu Ile Asp Lys Gln Thr Trp Thr Asp Glu Gly
 705 710 715 720
 Ser Val Ser Glu Arg Met Leu Arg Ser Glu Leu Leu Leu Leu Ala Cys
 725 730 735
 Val His Asn Tyr Gln Pro Cys Val Gln Arg Ala Glu Gly Tyr Phe Arg
 740 745 750
 Lys Trp Lys Glu Ser Asn Gly Asn Leu Ser Leu Pro Val Asp Val Thr
 755 760 765
 Leu Ala Val Phe Ala Val Gly Ala Gln Ser Thr Glu Gly Trp Asp Phe
 770 775 780
 Leu Tyr Ser Lys Tyr Gln Phe Ser Leu Ser Ser Thr Glu Lys Ser Gln
 785 790 795 800
 Ile Glu Phe Ala Leu Cys Xaa Pro Xaa Asn Lys Glu Lys Leu Xaa Trp
 805 810 815
 Leu Leu Xaa Glu Ser Phe Lys Gly Asp Lys Ile Lys Thr Gln Glu Phe
 820 825 830
 Pro Gln Ile Leu Thr Leu Ile Gly Arg Asn Pro Val Gly Tyr Pro Leu
 835 840 845
 Ala Trp Gln Phe Leu Arg Lys Asn Trp Asn Lys Leu Val Gln Lys Phe
 850 855 860

Glu Leu Gly Ser Ser Ser Ile Ala His Met Val Met Gly Thr Thr Asn
865 870 875 880

Gln Phe Ser Thr Arg Thr Arg Leu Glu Glu Val Lys Gly Phe Phe Ser
885 890 895

Ser Leu Lys Glu Asn Gly Ser Gln Leu Arg Cys Val Gln Gln Thr Ile
900 905 910

Glu Thr Ile Glu Glu Asn Ile Gly Trp Met Asp Lys Asn Phe Asp Lys
915 920 925

Ile Arg Val Trp Leu Gln Ser Glu Lys Leu Glu Arg Met
930 935 940

<210> 494

<211> 157

<212> PRT

<213> Homo sapiens

<400> 494

Met Val Lys Ser Val Ile Phe Leu Ser Phe Trp Gln Gly Met Leu Leu
1 5 10 15

Ala Ile Leu Glu Lys Cys Gly Ala Ile Pro Lys Ile His Ser Ala Arg
20 25 30

Val Ser Val Gly Glu Gly Thr Val Ala Ala Gly Tyr His Asp Phe Ile
35 40 45

Ile Cys Val Glu Met Phe Phe Ala Ala Leu Ala Leu Arg His Pro Phe
50 55 60

Thr Tyr Asn Val Tyr Ala Asp Lys Arg Leu Asp Ala Gln Gly Arg Cys
65 70 75 80

Ala Pro Met Lys Ser Ile Ser Ser Ser Leu Lys Glu Thr Met Asn Pro
85 90 95

His Asp Ile Val Gln Asp Ala Ile His Asn Phe Ser Pro Ala Tyr Gln
100 105 110

Gln Tyr Thr Gln Gln Ser Thr Leu Glu Pro Gly Pro Thr Trp Arg Gly
115 120 125

Gly Ala His Gly Leu Ser Arg Ser His Ser Leu Ser Gly Ala Arg Asp
130 135 140

Asn Glu Lys Thr Leu Leu Leu Ser Ser Asp Asp Glu Phe
145 150 155

<210> 495

<211> 118

<212> PRT

<213> Homo sapiens

<400> 495

Phe Leu Ser Ser Trp Gln Arg Pro Ala Cys Gly Cys Gln Arg Pro Ala
 1 5 10 15
 Leu Pro Leu His Leu Gly Gly Ala Glu Gln Leu Gly Pro Ser Cys Pro
 20 25 30
 Gly Gly Trp Val Gln Thr Gln Ala Glu Asp Gln Pro Trp Pro Cys Pro
 35 40 45
 Ala Ile Cys Phe His Gln Ala Val Ser Pro Pro Trp Leu Pro Phe Ser
 50 55 60
 Leu Gln Ala Lys Val Leu Leu Ile Pro Thr Pro Leu Val Phe Ala Cys
 65 70 75 80
 Pro Ala Leu Leu Phe Ala Trp Arg Val Gly Gly Ala Gln Trp Gln Gly
 85 90 95
 Ile Ser Gly Pro Trp Gly Arg Gly Asp Gly Asn Met Cys Pro Thr Ala
 100 105 110
 Pro Ser Pro Pro Pro Pro
 115

<210> 496
 <211> 59
 <212> PRT
 <213> Homo sapiens

<400> 496
 Met Met Lys Asp Val Phe Phe Phe Leu Phe Leu Leu Ala Val Trp Val
 1 5 10 15
 Val Ser Phe Gly Val Ala Lys Gln Ala Ile Leu Ile His Asn Glu Arg
 20 25 30
 Arg Val Asp Trp Leu Phe Arg Gly Pro Ser Thr Thr Pro Thr Ser Pro
 35 40 45
 Ser Ser Gly Arg Ser Arg Ala Thr Ser Thr Val
 50 55

<210> 497
 <211> 109
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (94)
 <223> Xaa equals any amino acid

<400> 497
 Met Asn Thr Leu Val Leu Trp Ile Phe Gly Phe Leu Ile Cys Leu Gly
 1 5 10 15
 Ile Ile Leu Ala Ile Gly Asn Ser Ile Trp Glu Ser Gln Thr Gly Asp

20 25 30
 Gln Phe Arg Thr Phe Leu Phe Trp Asn Glu Gly Glu Lys Ser Ser Val
 35 40 45
 Phe Ser Gly Phe Leu Thr Phe Trp Ser Tyr Ile Ile Ile Leu Asn Thr
 50 55 60
 Val Val Pro Ile Ser Leu Tyr Val Ser Val Glu Val Ile Arg Leu Gly
 65 70 75 80
 His Ser Tyr Phe Ile Asn Trp Asp Arg Lys Met Tyr Tyr Xaa Arg Lys
 85 90 95
 Ala Ile Pro Ala Val Ala Arg Thr Thr Thr Leu Asn Glu
 100 105

<210> 498
 <211> 46
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (45)
 <223> Xaa equals any amino acid

<400> 498
 Ile Asn His Val Phe Ile Trp Gly Ser Ile Ala Ile Tyr Phe Ser Ile
 1 5 10 15
 Leu Phe Thr Met His Ser Asn Gly Ile Phe Gly Ile Phe Pro Asn Gln
 20 25 30
 Phe Pro Phe Val Gly Asn Ala Arg His Ser Leu Thr Xaa Lys
 35 40 45

<210> 499
 <211> 6
 <212> PRT
 <213> Homo sapiens

<400> 499
 Thr Val Ala Ile Tyr Asp
 1 5

<210> 500
 <211> 11
 <212> PRT
 <213> Homo sapiens

<400> 500
 Phe Leu Val Cys Leu Leu Leu Gly Pro Arg Ser
 1 5 10

<210> 501
 <211> 56
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (35)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (42)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (46)
 <223> Xaa equals any amino acid

<400> 501
 Lys Ser Gln Met Gln Ser Phe Thr Ile Val Thr Ala Tyr Gly Arg Cys
 1 5 10 15
 Leu Ser Leu Thr Cys Leu Pro Thr Leu Asn Gln Met Leu Val Phe Lys
 20 25 30
 Ser Asn Xaa Ser Leu Val Ser Pro His Xaa Leu Thr Phe Xaa Asn Ile
 35 40 45
 Phe Ala Arg Phe Glu Asn Phe Gln
 50 55

<210> 502
 <211> 53
 <212> PRT
 <213> Homo sapiens

<400> 502
 Asn Tyr Asn Arg Gly Gly Thr Phe Leu Tyr Gln Lys Ala Lys Ile Lys
 1 5 10 15
 His His Val Leu Met Val Phe Tyr Lys Ser Thr Ser Asn Ser Thr Glu
 20 25 30
 Ser Leu Ile Trp Ser Leu Leu Asn Ser Trp Ser Asp Lys Val Thr Phe
 35 40 45
 Pro Lys Arg Val Arg
 50

<210> 503
 <211> 46
 <212> PRT
 <213> Homo sapiens

<400> 503

Met Pro Trp Leu Lys Ser Leu Leu His Phe Ser Leu Phe Leu Val Val
 1 5 10 15

Phe Ser Thr Leu Ala Val Lys Ser Leu Gly Val Pro Val Ala Ala Gly
 20 25 30

Ser Pro Phe Cys Ile Val Asp Val Leu His Phe Ile Leu Leu
 35 40 45

<210> 504

<211> 64

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (7)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (27)

<223> Xaa equals any amino acid

<400> 504

Ser Trp Val Ile Val Val Xaa Ile Trp Gly Tyr Leu Leu Glu Gly His
 1 5 10 15

Gly Val Pro Phe Cys Lys Ser Tyr Gly Pro Xaa Pro Trp Lys Leu His
 20 25 30

Thr His His Ala Ala Tyr Asn Ser Gly Ser Ser Gln Val Tyr Arg Ile
 35 40 45

Leu Gly Asn Ser Pro Cys Pro Val Leu Ile His Cys Ser Phe Ser Gly
 50 55 60

<210> 505

<211> 14

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (9)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (14)

<223> Xaa equals any amino acid

<400> 505

Trp Lys Gly Leu Leu Glu Gly Ser Xaa Glu Ala Thr Met Xaa
 1 5 10

<210> 506

<211> 107

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (66)

<223> Xaa equals any amino acid

<400> 506

Pro Leu Gly Arg Glu Pro Leu Ala Gly Phe Leu Ser Phe Leu Ser Phe
 1 5 10 15

Ser Leu Leu Trp Cys Leu Glu Ala Phe Pro Arg Leu Gln Phe Leu Thr
 20 25 30

Thr Leu Thr Asp Phe Ala Ile Val Leu Ser Pro Pro Leu Ser Phe Pro
 35 40 45

Lys Leu Thr Leu Trp Arg Leu Ile Lys Arg Lys Asn His Arg Pro Gly
 50 55 60

Ala Xaa Leu Thr Pro Arg Arg Arg Ala Asn His Leu Arg Cys Gly Val
 65 70 75 80

Arg Asp Gln Pro Asp Gln Asn Arg Glu Thr Pro Ser Leu Leu Asn Asn
 85 90 95

Thr Lys Leu Ala Gly Arg Gly Gly Ala Arg Leu
 100 105

<210> 507

<211> 127

<212> PRT

<213> Homo sapiens

<400> 507

Met Pro Arg Ala Pro Trp Arg Ile Pro Leu Cys Ala Leu Pro Thr Leu
 1 5 10 15

Cys Leu Gly Ser Pro Leu Pro Ser Gln Pro Thr His Pro Ile Phe Tyr
 20 25 30

Asp His Arg Ala Pro Thr Trp Lys Met Ala His Pro Gly Gly Pro Arg
 35 40 45

Ser Ser His Ser Pro Arg Gly Pro Gly Gly His Pro Ala Leu Arg Gln
 50 55 60

Arg Leu Pro Cys Arg Arg Gly Glu Pro Glu Thr Ala Leu Cys Ser Ser
 65 70 75 80

Ala Pro Gly Ala Gly Phe Ala Glu Pro Pro Cys Lys Ala Ser Pro Gly
85 90 95

Trp Gly Pro Pro Ser Arg Gly Pro Gln Gly Asp Arg Ser Gln Gly Glu
100 105 110

Trp Leu Pro Ala Leu Gly Thr Pro Cys Gly Gly Pro Asp Asp Ser
115 120 125

<210> 508

<211> 90

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (31)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (57)

<223> Xaa equals any amino acid

<400> 508

Met Pro Arg Ala Pro Trp Arg Ile Pro Leu Cys Ala Leu Pro Thr Leu
1 5 10 15

Cys Leu Gly Ser Pro Leu Pro Ser Gln Pro Thr His Pro Ile Xaa Tyr
20 25 30

Asp His Arg Ala Pro Thr Trp Lys Met Ala His Pro Gly Gly Pro Arg
35 40 45

Ser Ser His Ser Pro Arg Thr Trp Xaa Thr Pro Ser Ser Gln Thr Lys
50 55 60

Ala Ala Leu Pro Ala Gly Gly Ala Arg Asn Ser Pro Leu Gln Leu Cys
65 70 75 80

Thr Arg Ser Arg Phe Cys Gly Thr Pro Met
85 90

<210> 509

<211> 308

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (87)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (185)

<223> Xaa equals any amino acid

<400> 509

```

Met Pro Val Pro Trp Phe Leu Leu Ser Leu Ala Leu Gly Arg Ser Pro
 1           5           10           15

Val Val Leu Ser Leu Glu Arg Leu Val Gly Pro Gln Asp Ala Thr His
      20           25           30

Cys Ser Pro Gly Leu Ser Cys Arg Leu Trp Asp Ser Asp Ile Leu Cys
      35           40           45

Leu Pro Gly Asp Ile Val Pro Ala Pro Gly Pro Val Leu Ala Pro Thr
      50           55           60

His Leu Gln Thr Glu Leu Val Leu Arg Cys Gln Lys Glu Thr Asp Cys
      65           70           75           80

Asp Leu Cys Leu Arg Val Xaa Val His Leu Ala Val His Gly His Trp
      85           90           95

Glu Glu Pro Glu Asp Glu Glu Lys Phe Gly Gly Ala Ala Asp Leu Gly
      100           105           110

Val Glu Glu Pro Arg Asn Ala Ser Leu Gln Ala Gln Val Val Leu Ser
      115           120           125

Phe Gln Ala Tyr Pro Thr Ala Arg Cys Val Leu Leu Glu Val Gln Val
      130           135           140

Pro Ala Ala Leu Val Gln Phe Gly Gln Ser Val Gly Ser Val Val Tyr
      145           150           155           160

Asp Cys Phe Glu Ala Ala Leu Gly Ser Glu Val Arg Ile Trp Ser Tyr
      165           170           175

Thr Gln Pro Arg Tyr Glu Lys Glu Xaa Asn His Thr Gln Gln Leu Pro
      180           185           190

Asp Cys Arg Gly Leu Glu Val Trp Asn Ser Ile Pro Ser Cys Trp Ala
      195           200           205

Leu Pro Trp Leu Asn Val Ser Ala Asp Gly Asp Asn Val His Leu Val
      210           215           220

Leu Asn Val Ser Glu Glu Gln His Phe Gly Leu Ser Leu Tyr Trp Asn
      225           230           235           240

Gln Val Gln Gly Pro Pro Lys Pro Arg Trp His Lys Asn Leu Thr Gly
      245           250           255

Pro Gln Ile Ile Thr Leu Asn His Thr Asp Leu Val Pro Cys Leu Cys
      260           265           270

Ile Gln Val Trp Pro Leu Glu Pro Asp Ser Val Arg Arg Thr Ser Ala
      275           280           285

Pro Ser Gly Arg Thr Pro Ala His Thr Arg Thr Ser Gly Lys Pro Pro
      290           295           300

Asp Cys Asp Cys
      305

```

<210> 510
 <211> 55
 <212> PRT
 <213> Homo sapiens

<400> 510
 Met Ser Ser Asp Phe Leu Cys Phe Phe Phe Lys Leu Cys Asn Gln Met
 1 5 10 15
 Ile Leu Cys Phe Phe Phe Arg Gly Ala Glu Tyr Trp Phe Leu Leu Leu
 20 25 30
 Val Val Phe Ser Phe Leu Cys His Ser Cys Phe Phe Phe Val Phe Ser
 35 40 45
 Val Ser Asn Thr Ile Cys Ile
 50 55

<210> 511
 <211> 98
 <212> PRT
 <213> Homo sapiens

<400> 511
 Met His Cys Cys Gln Leu Pro Trp Arg Cys Ala Gln Ala Pro Gln Glu
 1 5 10 15
 Ala Phe Leu Leu Cys Leu Leu Phe Leu Ile Leu Val Leu Val Leu Leu
 20 25 30
 Gly Cys Ser Arg Gly Leu Pro Gly His Thr Pro Trp Arg Leu His Pro
 35 40 45
 Ala Ala Ala Ala Leu Leu Ala Pro Leu Leu His Asp Ala Leu Gly Ala
 50 55 60
 Cys Gly Phe Gln Gly Pro Glu Tyr Leu Leu Pro Cys Leu Leu Pro Leu
 65 70 75 80
 Pro Lys Pro Gly Gln Leu Gln Gly Pro Trp Gly Pro Leu Trp Ala Leu
 85 90 95
 Leu Pro

<210> 512
 <211> 22
 <212> PRT
 <213> Homo sapiens

<400> 512
 Leu Pro Arg Pro Cys Ala Pro Ser Pro Val Trp Arg Gln Val Gly Arg
 1 5 10 15

Glu Glu Ala Ser Leu Leu
20

<210> 513
<211> 25
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (9)
<223> Xaa equals any amino acid

<400> 513
Cys Ala Val Arg Phe Arg Glu Gln Xaa Ala Pro Glu Arg Val Phe Leu
1 5 10 15

Pro Thr Arg Gly Arg Lys Ser Glu Pro
20 25

<210> 514
<211> 365
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (144)
<223> Xaa equals any amino acid

<220>
<221> SITE
<222> (201)
<223> Xaa equals any amino acid

<400> 514
Met Phe Val Gly Leu Met Ala Phe Leu Leu Ser Phe Tyr Leu Ile Phe
1 5 10 15

Thr Asn Glu Gly Arg Ala Leu Lys Thr Ala Thr Ser Leu Ala Glu Gly
20 25 30

Leu Ser Leu Val Val Ser Pro Asp Ser Ile His Ser Val Ala Pro Glu
35 40 45

Asn Glu Gly Arg Leu Val His Ile Ile Gly Ala Leu Arg Thr Ser Lys
50 55 60

Leu Leu Ser Asp Pro Asn Tyr Gly Val His Leu Pro Ala Val Lys Leu
65 70 75 80

Arg Arg His Val Glu Met Tyr Gln Trp Val Glu Thr Glu Glu Ser Arg
85 90 95

Glu Tyr Thr Glu Asp Gly Gln Val Lys Lys Glu Thr Arg Tyr Ser Tyr
100 105 110


```

Asn Thr Glu Trp Arg Ser Glu Ile Ile Asn Ser Lys Asn Phe Asp Arg
   115                               120                   125

Glu Ile Gly His Lys Asn Pro Ser Ala Met Ala Val Glu Ser Phe Xaa
   130                               135                   140

Ala Thr Ala Pro Phe Val Gln Ile Gly Arg Phe Phe Leu Ser Ser Gly
   145                               150                   155                   160

Leu Ile Asp Lys Val Asp Asn Phe Lys Ser Leu Ser Leu Ser Lys Leu
   165                               170                   175

Glu Asp Pro His Val Asp Ile Ile Arg Arg Gly Asp Phe Phe Tyr His
   180                               185                   190

Ser Glu Asn Pro Lys Tyr Pro Glu Xaa Gly Asp Leu Arg Val Ser Phe
   195                               200                   205

Ser Tyr Ala Gly Leu Ser Gly Asp Asp Pro Asp Leu Gly Pro Ala His
   210                               215                   220

Val Val Thr Val Ile Ala Arg Gln Arg Gly Asp Gln Leu Val Pro Phe
   225                               230                   235                   240

Ser Thr Lys Ser Gly Asp Thr Leu Leu Leu Leu His His Gly Asp Phe
   245                               250                   255

Ser Ala Glu Glu Val Phe His Arg Glu Leu Arg Ser Asn Ser Met Lys
   260                               265                   270

Thr Trp Gly Leu Arg Ala Ala Gly Trp Met Ala Met Phe Met Gly Leu
   275                               280                   285

Asn Leu Met Thr Arg Ile Leu Tyr Thr Leu Val Asp Trp Phe Pro Val
   290                               295                   300

Phe Arg Asp Leu Val Asn Ile Gly Leu Lys Ala Phe Ala Phe Cys Val
   305                               310                   315                   320

Ala Thr Ser Leu Thr Leu Leu Thr Val Ala Ala Gly Trp Leu Phe Tyr
   325                               330                   335

Arg Pro Leu Trp Ala Leu Leu Ile Ala Gly Leu Ala Leu Val Pro Ile
   340                               345                   350

Leu Val Ala Arg Thr Arg Val Pro Ala Lys Lys Leu Glu
   355                               360                   365

```

<210> 515

<211> 108

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (48)

<223> Xaa equals any amino acid

<220>

<221> SITE
 <222> (55)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (58)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (67)
 <223> Xaa equals any amino acid

<400> 515
 Met Phe Tyr Lys Leu Thr Leu Ile Leu Cys Glu Leu Ser Val Ala Gly
 1 5 10 15
 Val Thr Gln Ala Ala Ser Gln Arg Pro Leu Gln Arg Leu Pro Arg His
 20 25 30
 Ile Cys Ser Gln Arg Asn Pro Pro Gly Arg Cys Leu Leu Lys Ala Xaa
 35 40 45
 Leu Gln Thr Thr Trp Gly Xaa Pro Asp Xaa Gln Phe Pro Gly Cys Pro
 50 55 60
 His Pro Xaa Arg Val Thr Leu Asn Ala Arg Gln Met Gly Asn Gly Lys
 65 70 75 80
 Glu Lys Lys Ala Ala Asp Leu Lys Leu Lys Phe Pro Gln Lys Arg Phe
 85 90 95
 Tyr Leu Ser Ala Phe Ser Glu Arg Ile Lys Ala Phe
 100 105

<210> 516
 <211> 73
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (38)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (48)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (54)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (55).

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (68)

<223> Xaa equals any amino acid

<400> 516

```

Met Phe Tyr Lys Leu Thr Leu Ile Leu Cys Glu Leu Ser Val Ala Gly
 1             5             10             15
Val Thr Gln Ala Ala Ser Gln Arg Pro Leu Gln Arg Leu Pro Arg His
                20             25             30
Ile Cys Ser Gln Arg Xaa Pro Pro Gly Arg Cys Leu Leu Lys Ala Xaa
    35             40             45
Leu Gln Thr Thr Trp Xaa Xaa Pro Asp Lys Pro Ile Pro Arg Leu Ser
    50             55             60
Pro Pro Leu Xaa Ser Asp Pro Lys Arg
    65             70

```

<210> 517

<211> 81

<212> PRT

<213> Homo sapiens

<400> 517

```

Met Ser Lys Arg Ser Ala Ser Phe Ile Leu Leu Pro Leu Leu Phe Leu
 1             5             10             15
Lys Gly Ser Phe Ala Lys Leu Asn Ala Arg Ile Ser Asp Cys Leu Glu
    20             25             30
Glu Arg Tyr Cys His Asn Leu Trp Met Val Phe Gln Gly Cys Val Ile
    35             40             45
Thr Glu Leu His Leu Ser Arg Met Ser Lys Thr Leu Ser Ser Leu Cys
    50             55             60
Tyr Asp Phe Val Ile Asn Val Tyr Ile Phe Phe Lys Phe Leu Asp Ile
    65             70             75             80
Thr

```

<210> 518

<211> 122

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (89)

<223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (91)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (94)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (97)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (98)
 <223> Xaa equals any amino acid

<400> 518
 Met His Arg Ser Glu Pro Phe Leu Lys Met Ser Leu Leu Ile Leu Leu
 1 5 10 15
 Phe Leu Gly Leu Ala Glu Ala Cys Thr Pro Arg Glu Val Asn Leu Leu
 20 25 30
 Lys Gly Ile Ile Gly Leu Met Ser Arg Leu Ser Pro Asp Glu Ile Leu
 35 40 45
 Gly Leu Leu Ser Leu Gln Val Leu His Glu Glu Thr Ser Gly Cys Lys
 50 55 60
 Glu Glu Val Lys Pro Phe Ser Gly Thr Thr Pro Ser Arg Lys Pro Leu
 65 70 75 80
 Pro Lys Arg Glu Glu His Val Glu Xaa Pro Xaa Asn Ala Xaa Thr Trp
 85 90 95
 Xaa Xaa Thr Tyr Leu Phe Val Ser Tyr Asn Lys Gly Asp Trp Phe Thr
 100 105 110
 Phe Ser Ser Gln Val Leu Leu Pro Leu Leu
 115 120

<210> 519
 <211> 11
 <212> PRT
 <213> Homo sapiens

<400> 519
 Met Ser Gly Gly Leu Ser Phe Leu Leu Leu Val
 1 5 10

<210> 520
 <211> 130
 <212> PRT

<213> Homo sapiens

<400> 520

Ser Thr Cys Cys Gly Trp Gly Pro Leu Gly His Ser Arg Val Arg Gly
 1 5 10 15

Cys His Cys His Leu Gly His Val Gly Arg His Gln His Phe Val Val
 20 25 30

Thr Asn Ser Thr Val Thr Asn Ile Phe Gly Gln Ile Pro Phe Tyr Thr
 35 40 45

Ser Arg Gln Leu Leu Val Cys Asn Pro Thr Gly Gln Arg Glu Gly Pro
 50 55 60

Val Thr Trp Leu Ser His Cys Pro Ala Pro Gln Met Val Leu Gly Leu
 65 70 75 80

Leu Phe Ser Leu Gly Pro Ala Asn Thr Thr Val Phe Thr Ser Ala His
 85 90 95

Trp Leu Ser Ala Val Val Pro Gly Ser Gln Trp His Val Ser Pro Arg
 100 105 110

Ser Ser Leu Ile Pro Gln His Thr Pro Lys Gly Ser Val Ala Asn Thr
 115 120 125

Leu Asn
 130

<210> 521

<211> 122

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (19)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (73)

<223> Xaa equals any amino acid

<400> 521

Lys Ala Pro Ser Ser His Pro Gly Leu Thr Cys Val Ser Leu Ser Arg
 1 5 10 15

Leu Gln Xaa Ser Leu Ser Leu Cys Phe Pro Ser Gly Pro Cys Trp Ala
 20 25 30

Gly Leu Leu Ser Ser Leu Ala Leu Ala Gly Gly Ala Pro Gly Ala Leu
 35 40 45

Pro Pro Trp Gln Pro Gly Gln Asp Ser Lys Met Arg Thr Ala Glu Leu
 50 55 60

Val Gly Gly Ser His Gly Pro Ala Xaa Gly Pro Gly Glu Ala Glu Pro

65					70					75					80
Glu	Pro	Thr	Ala	Val	Val	Leu	Trp	Thr	Val	Asp	Pro	Glu	Gly	Gly	Leu
				85					90					95	
Gly	Gln	Val	Pro	Ala	Glu	Gly	Pro	Gly	Gly	Leu	Cys	Val	Pro	Leu	Gly
			100					105					110		
Pro	Gly	Ala	Leu	Val	Thr	Trp	Thr	Pro	Gly						
			115				120								

```
<210> 522
<211> 243
<212> PRT
<213> Homo sapiens
```

```

<400> 522
Met Gly Thr Leu Pro Trp Leu Leu Ala Phe Phe Ile Leu Gly Leu Gln
  1           5           10           15

Ala Trp Asp Thr Pro Thr Ile Val Ser Arg Lys Glu Trp Gly Ala Arg
      20           25           30

Pro Leu Ala Cys Arg Ala Leu Leu Thr Leu Pro Val Ala Tyr Ile Ile
      35           40           45

Thr Asp Gln Leu Pro Gly Met Gln Cys Gln Gln Gln Ser Val Cys Ser
  50           55           60

Gln Met Leu Arg Gly Leu Gln Ser His Ser Val Tyr Thr Ile Gly Trp
  65           70           75           80

Cys Asp Val Ala Tyr Asn Phe Leu Val Gly Asp Asp Gly Arg Val Tyr
      85           90           95

Glu Gly Val Gly Trp Asn Ile Gln Gly Leu His Thr Gln Gly Tyr Asn
      100          105          110

Asn Ile Ser Leu Gly Ile Ala Phe Phe Gly Asn Lys Ile Ser Ser Ser
      115          120          125

Pro Ser Pro Ala Ala Leu Ser Ala Ala Glu Gly Leu Ile Ser Tyr Ala
      130          135          140

Ile Gln Lys Gly His Leu Ser Pro Arg Tyr Ile Gln Pro Leu Leu Leu
      145          150          155          160

Lys Glu Glu Thr Cys Leu Asp Pro Gln His Pro Val Met Pro Arg Lys
      165          170          175

Val Cys Pro Asn Ile Ile Lys Arg Ser Ala Trp Glu Ala Arg Glu Thr
      180          185          190

His Cys Pro Lys Met Asn Leu Pro Ala Lys Tyr Val Ile Ile Ile His
      195          200          205

Thr Ala Gly Thr Ser Cys Thr Val Ser Thr Asp Cys Gln Thr Val Val
      210          215          220

```

Arg Asn Ile Gln Ser Phe His Met Asp Thr Arg Asn Phe Cys Asp Ile
 225 230 235 240

Gly Tyr Gln

<210> 523

<211> 154

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (150)

<223> Xaa equals any amino acid

<400> 523

Met Ala Arg His Gly Leu Pro Leu Leu Pro Leu Leu Ser Leu Leu Val
 1 5 10 15

Gly Ala Trp Leu Lys Leu Gly Asn Gly Gln Ala Thr Ser Met Val Gln
 20 25 30

Leu Gln Gly Gly Arg Phe Leu Met Gly Thr Asn Ser Pro Asp Ser Arg
 35 40 45

Asp Gly Glu Gly Pro Val Arg Glu Ala Thr Val Lys Pro Phe Ala Ile
 50 55 60

Asp Ile Phe Pro Val Thr Asn Lys Asp Phe Arg Asp Phe Val Arg Glu
 65 70 75 80

Lys Lys Tyr Arg Thr Glu Ala Glu Met Phe Gly Trp Ser Phe Val Phe
 85 90 95

Glu Asp Phe Val Ser Asp Glu Leu Arg Asn Lys Ala Thr Gln Pro Met
 100 105 110

Lys Ser Val Leu Trp Trp Leu Pro Val Glu Lys Ala Phe Trp Arg Gln
 115 120 125

Pro Ala Gly Pro Gly Ser Gly Ile Arg Glu Arg Leu Glu His Pro Val
 130 135 140

Leu His Val Ser Trp Xaa Asp Ala Arg Ala
 145 150

<210> 524

<211> 57

<212> PRT

<213> Homo sapiens

<400> 524

Met Pro Cys Thr Cys Thr Trp Arg Asn Trp Arg Gln Trp Ile Arg Pro
 1 5 10 15

Leu Val Ala Val Ile Tyr Leu Val Ser Ile Val Val Ala Val Pro Leu

20 25 30
 Cys Val Trp Glu Leu Gln Lys Leu Glu Val Gly Ile His Thr Lys Ala
 35 40 45

Trp Phe Ile Ala Gly Ile Phe Leu Leu
 50 55

<210> 525
 <211> 107
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (92)
 <223> Xaa equals any amino acid

<400> 525
 Met Val Arg Tyr Thr Tyr Ser Met Leu Ser Val Ile Gly Ile Ser Tyr
 1 5 10 15

Ala Val Leu Thr Trp Leu Ser Gln Thr Leu Trp Met Pro Ile Tyr Pro
 20 25 30

Leu Cys Val Leu Ala Glu Ala Phe Ala Ile Tyr Gln Ser Leu Pro Tyr
 35 40 45

Phe Glu Ser Phe Gly Thr Tyr Ser Thr Lys Leu Pro Phe Asp Leu Ser
 50 55 60

Ile Tyr Phe Pro Tyr Val Leu Lys Ile Tyr Leu Met Met Leu Phe Ile
 65 70 75 80

Gly Met Tyr Phe Thr Tyr Ser His Leu Tyr Ser Xaa Arg Arg Asp Ile
 85 90 95

Leu Gly Ile Phe Pro Ile Lys Lys Lys Lys Met
 100 105

<210> 526
 <211> 37
 <212> PRT
 <213> Homo sapiens

<400> 526
 Met Val Arg Tyr Thr Tyr Ser Met Leu Ser Val Ile Gly Ile Ser Tyr
 1 5 10 15

Ala Val Leu Thr Trp Ala Gln Ser Asn Thr Met Asp Ala Asn Leu Ser
 20 25 30

Phe Val Cys Ser Cys
 35

<210> 527
 <211> 46
 <212> PRT
 <213> Homo sapiens

<400> 527
 Met Lys Ser Gln Cys Tyr Ser Pro Ser Tyr Phe Ala Phe Phe Cys Leu
 1 5 10 15
 Val Phe Phe Gln Ile Thr Ser Ala Ser Ser Gln Thr Leu Arg Gly His
 20 25 30
 Val Leu Cys Arg Thr Thr Leu Arg Asp Ser Ser Ala Tyr Cys
 35 40 45

<210> 528
 <211> 442
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (364)
 <223> Xaa equals any amino acid

<400> 528
 Met Trp Phe Thr Tyr Leu Leu Leu Tyr Leu His Ser Val Arg Ala Tyr
 1 5 10 15
 Ser Ser Arg Gly Ala Gly Cys Cys Cys Cys Trp Ala Arg Trp Arg Arg
 20 25 30
 Ala Val His Thr Ala Arg Gly Leu Arg Gly Arg Pro Arg Arg Gln Leu
 35 40 45
 Leu Arg Pro Leu Arg Pro Ala Gln Gly Leu Ala Pro Gly Arg His Arg
 50 55 60
 Leu Arg Pro Ala Val Leu Pro Leu His Leu Gln Pro Leu Pro Gly Leu
 65 70 75 80
 Trp Gly Gly His Ala Glu Trp Ala Ala Leu Leu Tyr Tyr Gly Pro Phe
 85 90 95
 Ile Val Ile Phe Gln Phe Gly Trp Ala Ser Thr Gln Ile Ser His Leu
 100 105 110
 Ser Leu Ile Pro Glu Leu Val Thr Asn Asp His Glu Lys Val Glu Leu
 115 120 125
 Thr Ala Leu Arg Tyr Ala Phe Thr Val Val Ala Asn Ile Thr Val Tyr
 130 135 140
 Gly Ala Ala Trp Leu Leu Leu His Leu Gln Gly Ser Ser Arg Val Glu
 145 150 155 160
 Pro Thr Gln Asp Ile Ser Ile Ser Asp Gln Leu Gly Gly Gln Asp Val
 165 170 175

Pro Val Phe Arg Asn Leu Ser Leu Leu Val Val Gly Val Gly Ala Val
 180 185 190
 Phe Ser Leu Leu Phe His Leu Gly Thr Arg Glu Arg Arg Arg Pro His
 195 200 205
 Ala Glu Glu Pro Gly Glu His Thr Pro Leu Leu Ala Pro Ala Thr Ala
 210 215 220
 Gln Pro Leu Leu Leu Trp Lys His Trp Leu Arg Glu Pro Ala Phe Tyr
 225 230 235 240
 Gln Val Gly Ile Leu Tyr Met Thr Thr Arg Leu Ile Val Asn Leu Ser
 245 250 255
 Gln Thr Tyr Met Ala Met Tyr Leu Thr Tyr Ser Leu His Leu Pro Lys
 260 265 270
 Lys Phe Ile Ala Thr Ile Pro Leu Val Met Tyr Leu Ser Gly Phe Leu
 275 280 285
 Ser Ser Phe Leu Met Lys Pro Ile Asn Lys Cys Ile Gly Arg Asn Met
 290 295 300
 Thr Tyr Phe Ser Gly Leu Leu Val Ile Leu Ala Phe Ala Ala Trp Val
 305 310 315 320
 Ala Leu Ala Glu Gly Leu Gly Val Ala Val Tyr Ala Ala Ala Val Leu
 325 330 335
 Leu Gly Ala Gly Cys Ala Thr Ile Leu Val Thr Ser Leu Ala Met Thr
 340 345 350
 Ala Asp Leu Ile Gly Pro His Thr Asn Ser Gly Xaa Phe Val Tyr Gly
 355 360 365
 Ser Met Ser Phe Leu Asp Lys Val Ala Asn Gly Leu Ala Val Met Ala
 370 375 380
 Ile Gln Ser Leu His Pro Cys Pro Ser Glu Leu Cys Cys Arg Ala Cys
 385 390 395 400
 Val Ser Phe Tyr His Trp Ala Met Val Ala Val Thr Gly Gly Val Gly
 405 410 415
 Val Ala Ala Ala Leu Cys Leu Cys Ser Leu Leu Leu Trp Pro Thr Arg
 420 425 430
 Leu Arg Arg Trp Asp Arg Asp Ala Arg Pro
 435 440

<210> 529

<211> 309

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (26)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (84)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (111)

<223> Xaa equals any amino acid

<400> 529

Ala Ala Asp Asn Tyr Gly Ile Pro Arg Ala Cys Arg Asn Ser Ala Arg
1 5 10 15

Ser Tyr Gly Ala Ala Trp Leu Leu Leu Xaa Pro Ala Gly Ser Ser Arg
20 25 30

Val Glu Pro Thr Gln Asp Ile Ser Ile Ser Asp Gln Leu Gly Gly Gln
35 40 45

Asp Val Pro Val Phe Arg Asn Leu Ser Leu Leu Val Val Gly Val Gly
50 55 60

Ala Val Phe Ser Leu Leu Phe His Leu Gly Thr Arg Glu Arg Arg Arg
65 70 75 80

Pro His Ala Xaa Glu Pro Gly Glu His Thr Pro Leu Leu Ala Pro Ala
85 90 95

Thr Ala Gln Pro Leu Leu Leu Trp Lys His Trp Leu Arg Glu Xaa Ala
100 105 110

Phe Tyr Gln Val Gly Ile Leu Tyr Met Thr Thr Arg Leu Ile Val Asn
115 120 125

Leu Ser Gln Thr Tyr Met Ala Met Tyr Leu Thr Tyr Ser Leu His Leu
130 135 140

Pro Lys Lys Phe Ile Ala Thr Ile Pro Leu Val Met Tyr Leu Ser Gly
145 150 155 160

Phe Leu Ser Ser Phe Leu Met Lys Pro Ile Asn Lys Cys Ile Gly Arg
165 170 175

Asn Met Thr Tyr Phe Ser Gly Leu Leu Val Ile Leu Ala Phe Ala Ala
180 185 190

Trp Val Ala Leu Ala Glu Gly Leu Gly Val Ala Val Tyr Ala Ala Ala
195 200 205

Val Leu Leu Gly Ala Gly Cys Ala Thr Ile Leu Val Thr Ser Leu Ala
210 215 220

Met Thr Ala Asp Leu Ile Gly Pro His Thr Asn Ser Gly Ala Phe Val
225 230 235 240

Tyr Gly Ser Met Ser Phe Leu Asp Lys Val Ala Asn Gly Leu Ala Val
245 250 255

Met Ala Ile Gln Ser Leu His Pro Cys Pro Ser Glu Leu Cys Cys Arg
 260 265 270

Ala Cys Val Ser Phe Tyr His Trp Ala Met Val Ala Val Thr Gly Gly
 275 280 285

Val Gly Val Ala Ala Ala Leu Cys Leu Cys Ser Leu Leu Leu Trp Pro
 290 295 300

Thr Arg Leu Arg Arg
 305

<210> 530
 <211> 243
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (26)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (84)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (111)
 <223> Xaa equals any amino acid

<400> 530
 Ala Ala Asp Asn Tyr Gly Ile Pro Arg Ala Cys Arg Asn Ser Ala Arg
 1 5 10 15

Ser Tyr Gly Ala Ala Trp Leu Leu Leu Xaa Pro Ala Gly Ser Ser Arg
 20 25 30

Val Glu Pro Thr Gln Asp Ile Ser Ile Ser Asp Gln Leu Gly Gly Gln
 35 40 45

Asp Val Pro Val Phe Arg Asn Leu Ser Leu Leu Val Val Gly Val Gly
 50 55 60

Ala Val Phe Ser Leu Leu Phe His Leu Gly Thr Arg Glu Arg Arg Arg
 65 70 75 80

Pro His Ala Xaa Glu Pro Gly Glu His Thr Pro Leu Leu Ala Pro Ala
 85 90 95

Thr Ala Gln Pro Leu Leu Leu Trp Lys His Trp Leu Arg Glu Xaa Ala
 100 105 110

Phe Tyr Gln Val Gly Ile Leu Tyr Met Thr Thr Arg Leu Ile Val Asn
 115 120 125

Leu Ser Gln Thr Tyr Met Ala Met Tyr Leu Thr Tyr Ser Leu His Leu
 130 135 140

Pro Lys Lys Phe Ile Ala Thr Ile Pro Leu Val Met Tyr Leu Ser Gly
 145 150 155 160

Phe Leu Ser Ser Phe Leu Met Lys Pro Ile Asn Lys Cys Ile Gly Arg
 165 170 175

Asn Met Thr Tyr Phe Ser Gly Leu Leu Val Ile Leu Ala Phe Ala Ala
 180 185 190

Trp Val Ala Leu Ala Glu Gly Leu Gly Val Ala Val Tyr Ala Ala Ala
 195 200 205

Val Leu Leu Gly Ala Gly Cys Ala Thr Ile Leu Val Thr Ser Leu Ala
 210 215 220

Met Thr Ala Asp Leu Ile Gly Pro His Thr Asn Ser Gly Leu Ser Cys
 225 230 235 240

Thr Ala Pro

<210> 531
 <211> 148
 <212> PRT
 <213> Homo sapiens

<400> 531
 Met Ala Gly Ser Pro Leu Leu Trp Gly Pro Arg Ala Gly Gly Val Gly
 1 5 10 15

Leu Leu Val Leu Leu Leu Leu Gly Leu Phe Arg Pro Pro Pro Ala Leu
 20 25 30

Cys Ala Arg Pro Val Lys Glu Pro Arg Gly Leu Ser Ala Ala Ser Pro
 35 40 45

Pro Leu Ala Arg Leu Ala Leu Leu Ala Ala Ser Gly Gly Gln Cys Pro
 50 55 60

Glu Val Arg Arg Arg Gly Arg Cys Arg Pro Gly Ala Gly Ala Gly Ala
 65 70 75 80

Ser Ala Gly Ala Glu Arg Gln Glu Arg Ala Arg Ala Glu Ala Gln Arg
 85 90 95

Leu Arg Ile Ser Arg Arg Ala Ser Trp Arg Ser Cys Cys Ala Ser Gly
 100 105 110

Ala Pro Pro Ala Thr Leu Ile Arg Leu Trp Ala Trp Thr Thr Thr Pro
 115 120 125

Thr Arg Leu Gln Arg Ser Ser Leu Ala Leu Cys Ser Ala Pro Ala Leu
 130 135 140

Thr Leu Pro Pro
 145

<210> 532
 <211> 65
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (24)
 <223> Xaa equals any amino acid

<400> 532
 Met Cys Lys Gly Leu Lys Asn Pro Glu Gly Leu Leu Leu Leu Leu Leu
 1 5 10 15
 Leu Leu Leu Phe Thr Asp Thr Xaa Asn Ser His Cys Leu Pro Pro Tyr
 20 25 30
 Leu Ser Cys Phe Leu His Glu Arg Gln Pro Glu Leu Gln Ser Val Cys
 35 40 45
 Ile Ser Ala Ala Tyr Val Leu Ala Pro Leu Gln Asn Pro Val Ser Ser
 50 55 60
 Leu
 65

<210> 533
 <211> 299
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (172)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (174)
 <223> Xaa equals any amino acid

<400> 533
 Gly Gly Glu Glu Glu Gly Glu Glu Gly Ala Glu Ile Ser Gly Leu Gly
 1 5 10 15
 Ala Gly Arg Arg Ser Ala Pro Ile Ala Val Gly Leu Gly Phe Leu Gly
 20 25 30
 Val Gly Gly Arg Gly Gly Ser Asp Met Glu Ala Asn Gly Ser Gln Gly
 35 40 45
 Thr Ser Gly Ser Ala Asn Asp Ser Gln His Asp Pro Gly Lys Met Phe
 50 55 60
 Ile Gly Gly Leu Ser Trp Gln Thr Ser Pro Asp Ser Leu Arg Asp Tyr
 65 70 75 80
 Phe Ser Lys Phe Gly Glu Ile Arg Glu Cys Met Val Met Arg Asp Pro

85					90					95					
Thr	Thr	Lys	Arg	Ser	Arg	Gly	Phe	Gly	Phe	Val	Thr	Phe	Ala	Asp	Pro
		100						105					110		
Ala	Ser	Val	Asp	Lys	Val	Leu	Gly	Gln	Pro	His	His	Glu	Leu	Asp	Ser
		115					120					125			
Lys	Thr	Ile	Asp	Pro	Lys	Val	Ala	Phe	Pro	Arg	Arg	Ala	Gln	Pro	Lys
		130				135					140				
Met	Val	Thr	Arg	Thr	Lys	Lys	Ile	Phe	Val	Gly	Gly	Leu	Ser	Ala	Asn
145					150					155					160
Thr	Val	Val	Glu	Asp	Val	Lys	Gln	Tyr	Phe	Glu	Xaa	Phe	Xaa	Lys	Val
				165					170					175	
Glu	Asp	Ala	Met	Leu	Met	Phe	Asp	Lys	Thr	Thr	Asn	Arg	His	Arg	Gly
			180					185					190		
Phe	Gly	Phe	Val	Thr	Phe	Glu	Asn	Glu	Asp	Val	Val	Glu	Lys	Val	Cys
		195					200					205			
Glu	Ile	His	Phe	His	Glu	Ile	Asn	Asn	Lys	Met	Val	Glu	Cys	Lys	Lys
	210					215					220				
Ala	Gln	Pro	Lys	Glu	Val	Met	Phe	Pro	Pro	Gly	Thr	Arg	Gly	Arg	Ala
225					230					235					240
Arg	Gly	Leu	Pro	Tyr	Thr	Met	Asp	Ala	Phe	Met	Leu	Gly	Met	Gly	Met
				245					250					255	
Leu	Gly	Glu	Ser	Gly	Gln	Asp	Arg	Arg	Ser	Pro	Trp	Thr	Gly	Arg	Ala
			260				265						270		
Met	Glu	Ala	Ser	Thr	Pro	Asn	Trp	Val	Thr	Tyr	Gln	Trp	Gly	Lys	Leu
		275					280					285			
Leu	His	Leu	Ser	Lys	Pro	Gln	Phe	Pro	Cys	Leu					
		290					295								

<210> 534

<211> 306

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (171)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (180)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (182)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (188)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (208)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (210)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (211)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (218)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (219)

<223> Xaa equals any amino acid

<400> 534

Met Ala Leu Arg Leu Leu Arg Arg Ala Ala Arg Gly Ala Ala Ala Ala
1 5 10 15

Ala Leu Leu Arg Leu Lys Ala Ser Leu Ala Ala Asp Ile Pro Arg Leu
20 25 30

Gly Tyr Ser Ser Ser Ser His His Lys Tyr Ile Pro Arg Arg Ala Val
35 40 45

Leu Tyr Val Pro Gly Asn Asp Glu Lys Lys Ile Lys Lys Ile Pro Ser
50 55 60

Leu Asn Val Asp Cys Ala Val Leu Asp Cys Glu Asp Gly Val Ala Ala
65 70 75 80

Asn Lys Lys Asn Glu Ala Arg Leu Arg Ile Val Lys Thr Leu Glu Asp
85 90 95

Ile Asp Leu Gly Pro Thr Glu Lys Cys Val Arg Val Asn Ser Val Ser
100 105 110

Ser Gly Leu Ala Glu Glu Asp Leu Glu Thr Leu Leu Gln Ser Arg Val
115 120 125

Leu Pro Ser Ser Leu Met Leu Pro Lys Val Glu Ser Pro Glu Glu Ile
130 135 140

Gln Trp Ala Val Cys Glu Glu Thr Leu Lys Val Gly Pro Gln Val Gly

145 150 155 160
 Leu Phe Leu Asp Ala Val Arg Phe Trp Arg Xaa Arg Leu Ser Ser His
 165 170 175
 Ile Gly Ala Xaa Ser Xaa Lys Glu Thr Leu Asp Xaa Leu Tyr Ala Arg
 180 185 190
 Gln Lys Ile Val Val Ile Ala Lys Ala Phe Gly Leu Gln Ala Val Xaa
 195 200 205
 Leu Xaa Xaa Ile Asp Phe Arg Asp Gly Xaa Xaa Leu Leu Arg Gln Ser
 210 215 220
 Arg Glu Gly Ala Ala Met Gly Phe Thr Gly Lys Gln Val Ile His Pro
 225 230 235 240
 Asn Gln Ile Ala Val Val Gln Glu Gln Phe Ser Pro Ser Pro Glu Lys
 245 250 255
 Ile Lys Trp Ala Glu Glu Leu Ile Ala Ala Phe Lys Glu His Gln Gln
 260 265 270
 Leu Gly Lys Gly Ala Phe Thr Phe Gln Gly Ser Met Ile Asp Met Pro
 275 280 285
 Leu Leu Lys Gln Ala Gln Asn Thr Val Thr Leu Ala Thr Ser Ile Lys
 290 295 300
 Glu Lys
 305

<210> 535
 <211> 64
 <212> PRT
 <213> Homo sapiens

<400> 535
 Met Val Ser Pro Leu Ile Ser Ala Leu Phe His Val Pro Phe Leu Trp
 1 5 10 15
 Leu Gly Met Phe Phe Pro His Ser Leu Ser Gly Pro Phe Pro Ser His
 20 25 30
 Leu Arg Arg Ala Ser Ser Ser Arg Lys Pro Leu Val Lys Pro Pro Arg
 35 40 45
 Ala Arg Gln Tyr Pro Pro Leu Ala Ser Ser Gly Tyr Arg Gly Arg Ile
 50 55 60

<210> 536
 <211> 26
 <212> PRT
 <213> Homo sapiens

<400> 536

Met Ser Phe Pro His Ala Ser Thr Leu Pro Phe His Lys Leu Ser Asp
 1 5 10 15

Leu Gln His Thr Leu Pro Asn His Gln Gly
 20 25

<210> 537

<211> 50

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (4)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (10)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (22)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (35)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (39)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (42)

<223> Xaa equals any amino acid

<400> 537

Val His Ala Xaa Thr Pro Phe Ala Gly Xaa Cys Phe Asp Pro Val Ser
 1 5 10 15

Leu Tyr Trp Cys Tyr Xaa Asn Pro Gly Thr His Cys Tyr Pro Thr Leu
 20 25 30

Arg Gly Xaa Glu Gln Arg Xaa Pro Ser Xaa Arg Ser His Ile Val Leu
 35 40 45

Arg Ser

50

<210> 538

<211> 57
 <212> PRT
 <213> Homo sapiens

<400> 538
 Met Pro Pro His Arg Gln Thr Asp Gly Gln Met Gly Leu Pro Ala Pro
 1 5 10 15
 Ala Leu Trp Val Trp Gly Leu Leu Leu Ser Ser Ser Phe Gln Thr Leu
 20 25 30
 Leu Pro Ala Phe Pro Lys Pro Pro Ala Leu Asn Leu Gly Cys Ser Thr
 35 40 45
 Arg Pro Ile Pro Ser Phe Leu Lys Ile
 50 55

<210> 539
 <211> 93
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (24)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (65)
 <223> Xaa equals any amino acid

<400> 539
 Gln Val Ser Leu Pro Thr Arg Leu Leu Gln Met Pro Gly Met Gly Leu
 1 5 10 15
 Asp Ser Arg Phe Gln Ala Trp Xaa Pro Ser Pro Tyr Leu Gly Pro Gln
 20 25 30
 Pro Arg Ala Pro Arg Pro Gly Leu Gln Pro Gly Pro Ser Leu Arg Gly
 35 40 45
 Ala Glu Phe Arg Glu Ser Cys Pro Arg Ser Gln Lys Arg Gly Arg Glu
 50 55 60
 Xaa Gly Arg Pro Cys Pro Gly Cys Arg Pro Gly Gly Trp Gly Leu Pro
 65 70 75 80
 Ala Arg Leu Gly Gln Pro Gln Leu Gln Thr Gly Pro Gly
 85 90

<210> 540
 <211> 172
 <212> PRT
 <213> Homo sapiens

<220>

<221> SITE

<222> (170)

<223> Xaa equals any amino acid

<400> 540

```

Met Arg Gly Ser Val Glu Cys Thr Trp Gly Trp Gly His Cys Ala Pro
 1           5           10           15

Ser Pro Leu Leu Leu Trp Thr Leu Leu Leu Phe Ala Ala Pro Phe Gly
          20           25           30

Leu Leu Gly Glu Lys Thr Arg Gln Leu Leu Glu Phe Asp Ser Thr Asn
 35           40           45

Val Ser Asp Thr Ala Ala Lys Pro Leu Gly Arg Pro Tyr Pro Pro Tyr
 50           55           60

Ser Leu Ala Asp Phe Ser Trp Asn Asn Ile Thr Asp Ser Leu Asp Pro
 65           70           75           80

Ala Thr Leu Ser Ala Thr Phe Gln Gly His Pro Met Asn Asp Pro Thr
          85           90           95

Arg Thr Phe Ala Asn Gly Ser Leu Ala Phe Arg Val Gln Ala Phe Ser
          100          105          110

Arg Ser Ser Arg Pro Ala Gln Pro Pro Arg Leu Leu His Thr Ala Asp
 115          120          125

Thr Cys Gln Leu Glu Val Ala Leu Ile Gly Ala Ser Pro Arg Gly Asn
 130          135          140

Arg Ser Leu Phe Gly Leu Glu Val Ala Thr Leu Gly Gln Gly Pro Asp
 145          150          155          160

Cys Pro Ser Met Gln Glu Gln His Ser Xaa Glu Arg
          165          170

```

<210> 541

<211> 131

<212> PRT

<213> Homo sapiens

<400> 541

```

Met Arg Gly Ser Val Glu Cys Thr Trp Gly Trp Gly His Cys Ala Pro
 1           5           10           15

Ser Pro Leu Leu Leu Trp Thr Leu Leu Leu Phe Ala Ala Pro Phe Gly
          20           25           30

Leu Leu Gly Glu Lys Thr Arg Gln Leu Leu Glu Phe Asp Ser Thr Asn
 35           40           45

Val Ser Asp Thr Ala Ala Lys Pro Leu Gly Arg Pro Tyr Pro Pro Tyr
 50           55           60

Ser Leu Ala Asp Phe Ser Trp Asn Asn Ile Thr Asp Ser Leu Asp Pro
 65           70           75           80

```

[illegible]

```
<210> 542
<211> 121
<212> PRT
<213> Homo sapiens
```

```

<400> 542
Met Cys Phe Leu Met Ile Phe Thr Phe Leu Val Cys Trp Met Pro Tyr
  1          5          10          15

Ile Val Ile Cys Phe Leu Val Val Asn Gly His Gly His Leu Val Thr
          20          25          30

Pro Thr Ile Ser Ile Val Ser Tyr Leu Phe Ala Lys Ser Asn Thr Val
          35          40          45

Tyr Asn Pro Val Ile Tyr Val Phe Met Ile Arg Lys Phe Arg Arg Ser
  50          55          60

Leu Leu Gln Leu Leu Cys Leu Arg Leu Leu Arg Cys Gln Arg Pro Ala
  65          70          75          80

Lys Asp Leu Pro Ala Ala Gly Ser Glu Met Gln Ile Arg Pro Ile Val
          85          90          95

Met Ser Gln Lys Asp Gly Asp Arg Pro Lys Lys Ser Asp Phe Gln Leu
          100          105          110

Phe Phe His His Phe Tyr His His Gln
  115          120

```

```
<210> 543
<211> 49
<212> PRT
<213> Homo sapiens
```

```
<220>
<221> SITE
<222> (41)
<223> Xaa equals any amino acid
```

<400> 543
Met Gly Ala His Ser Phe Gly Phe Gln Leu Phe Met Ser Val Ser Val
1 5 10 15

Leu Trp Gly Arg Leu Cys Leu Tyr Gly Arg Phe Ser Val Ile Thr Phe
 20 25 30
 Ala Ser Pro Pro Thr Thr Phe Met Xaa Ile Gln Cys Cys Ser His Cys
 35 40 45
 Ser

<210> 544
 <211> 484
 <212> PRT
 <213> Homo sapiens

<400> 544
 Met Pro Arg His Leu Ser Gly Leu Leu Leu Leu Trp Pro Leu Leu
 1 5 10 15
 Leu Leu Leu Pro Pro Thr Pro Ala Ala Pro Gly Pro Leu Ala Arg Pro
 20 25 30
 Gly Leu Arg Arg Leu Gly Thr Arg Gly Pro Gly Gly Ser Pro Gly Arg
 35 40 45
 Arg Pro Gly Ser Ala Val Pro Thr Arg Ala Pro Tyr Ser Gly Ala Gly
 50 55 60
 Gln Pro Gly Gly Ala Arg Gly Ala Gly Val Cys Arg Ser Arg Pro Leu
 65 70 75 80
 Asp Leu Val Phe Ile Ile Asp Ser Ser Arg Ser Val Arg Pro Leu Glu
 85 90 95
 Phe Thr Lys Val Lys Thr Phe Val Ser Gln Ile Ile Asp Thr Leu Asp
 100 105 110
 Ile Gly Ala Ala Asp Thr Arg Val Ala Val Val Asn Tyr Ala Ser Thr
 115 120 125
 Val Lys Ile Glu Phe His Leu Gln Thr His Ser Asp Lys Gln Ser Leu
 130 135 140
 Lys Gln Ala Val Ala Arg Ile Thr Pro Leu Ser Thr Gly Thr Met Ser
 145 150 155 160
 Gly Leu Ala Ile Gln Thr Ala Met Asp Glu Ala Phe Thr Val Glu Ala
 165 170 175
 Gly Ala Arg Gly Pro Thr Ser Asn Ile Pro Lys Val Ala Ile Ile Val
 180 185 190
 Thr Asp Gly Arg Pro Gln Asp Gln Val Asn Glu Val Ala Ala Arg Ala
 195 200 205
 Arg Ala Ser Gly Ile Glu Leu Tyr Ala Val Gly Val Asp Arg Ala Asp
 210 215 220
 Met Glu Ser Leu Lys Met Met Ala Ser Glu Pro Leu Asp Glu His Val
 225 230 235 240

Phe	Tyr	Val	Glu	Thr	Tyr	Gly	Val	Ile	Glu	Lys	Leu	Ser	Ser	Arg	Phe	
				245					250					255		
Gln	Glu	Thr	Phe	Cys	Ala	Leu	Asp	Pro	Cys	Val	Leu	Gly	Thr	His	Arg	
				260					265					270		
Cys	Gln	His	Val	Cys	Val	Ser	Asp	Gly	Glu	Gly	Lys	His	His	Cys	Glu	
				275					280					285		
Cys	Ser	Gln	Gly	Tyr	Ser	Leu	Asn	Ala	Asp	Gln	Lys	Thr	Cys	Ser	Ala	
				290					295					300		
Ile	Asp	Lys	Cys	Ala	Leu	Asn	Thr	His	Gly	Cys	Glu	His	Ile	Cys	Val	
				305					310					315		
Asn	Asp	Arg	Thr	Gly	Ser	Tyr	His	Cys	Glu	Cys	Tyr	Glu	Gly	Tyr	Thr	
				325					330					335		
Leu	Asn	Gln	Asp	Arg	Lys	Thr	Cys	Ser	Ala	Gln	Asp	Gln	Cys	Ala	Phe	
				340					345					350		
Gly	Thr	His	Gly	Cys	Gln	His	Ile	Cys	Val	Asn	Asp	Arg	Asp	Gly	Ser	
				355					360					365		
His	His	Cys	Glu	Cys	Tyr	Glu	Gly	Tyr	Thr	Leu	Asn	Ala	Asp	Asn	Lys	
				370					375					380		
Thr	Cys	Ser	Val	Arg	Ser	Glu	Cys	Ala	Gly	Gly	Ser	His	Gly	Cys	Gln	
				385					390					395		
His	Leu	Cys	Val	Asp	Asp	Gly	Pro	Ala	Ala	Tyr	His	Cys	Asp	Cys	Phe	
				405					410					415		
Pro	Gly	Tyr	Thr	Leu	Thr	Glu	Asp	Arg	Arg	Thr	Cys	Ala	Ala	Ile	Glu	
				420					425					430		
Glu	Ala	Arg	Arg	Leu	Val	Ser	Thr	Glu	Asp	Ala	Cys	Gly	Cys	Glu	Ala	
				435					440					445		
Thr	Leu	Ala	Phe	Gln	Glu	Arg	Ala	Ser	Ser	Tyr	Leu	Gln	Arg	Leu	Asn	
				450					455					460		
Ala	Lys	Leu	Asp	Asp	Ile	Leu	Gly	Lys	Leu	Gln	Ala	Asp	Ala	Tyr	Gly	
				465					470					475		
Gln	Ile	His	Arg													

<210> 545

<211> 266

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (45)

<223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (47)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (51)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (134)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (183)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (222)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (224)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (255)
 <223> Xaa equals any amino acid

<400> 545
 Met Pro Arg His Leu Ser Gly Leu Leu Leu Leu Trp Pro Leu Leu
 1 5 10 15
 Leu Leu Leu Pro Pro Thr Pro Ala Ala Pro Gly Pro Leu Ala Arg Pro
 20 25 30
 Gly Leu Arg Arg Leu Gly Thr Arg Gly Pro Gly Gly Xaa Pro Xaa Arg
 35 40 45
 Arg Pro Xaa Ser Ala Val Pro Thr Arg Ala Pro Tyr Ser Gly Ala Gly
 50 55 60
 Gln Pro Gly Gly Ala Arg Gly Ala Gly Val Cys Arg Ser Arg Pro Leu
 65 70 75 80
 Asp Leu Val Phe Ile Ile Asp Ser Ser Arg Ser Val Arg Pro Leu Glu
 85 90 95
 Phe Thr Lys Val Lys Thr Phe Val Ser Gln Ile Ile Asp Thr Leu Asp
 100 105 110
 Ile Gly Ala Ala Asp Thr Arg Val Ala Val Val Asn Tyr Ala Ser Thr
 115 120 125
 Val Lys Ile Glu Phe Xaa Leu Gln Thr His Ser Asp Lys Gln Ser Leu

130	135	140
Lys Gln Ala Val Ala Arg Ile Thr Pro Leu Ser Thr Gly Thr Met Ser		
145	150	155 160
Gly Leu Ala Ile Gln Thr Ala Met Asp Glu Ala Phe Thr Val Glu Ala		
	165	170 175
Gly Ala Arg Gly Pro Thr Xaa Asn Ile Pro Lys Val Ala Ile Ile Val		
	180	185 190
Thr Asp Gly Arg Pro Gln Asp Gln Val Asn Glu Val Ala Ala Arg Ala		
	195	200 205
Arg Ala Ser Gly Ile Glu Leu Tyr Ala Val Gly Val Asp Xaa Ala Xaa		
	210	215 220
Met Glu Ser Leu Gln Asp Glu Trp Pro Ala Lys Pro Leu Asp Glu His		
	225	230 235 240
Val Phe Tyr Val Glu Thr Tyr Gly Val Ile Glu Lys Pro Ser Xaa Arg		
	245	250 255
Phe Gln Glu Thr Leu Leu Arg Ser Trp Asn		
	260	265

<210> 546
 <211> 5
 <212> PRT
 <213> Homo sapiens

<400> 546
 Val Leu Leu Ile Leu
 1 5

<210> 547
 <211> 84
 <212> PRT
 <213> Homo sapiens

<400> 547
 Lys Met His Phe Asn Lys Asn Lys Ser Ile Leu Lys Ser Phe Ser Phe
 1 5 10 15
 Val Arg Gly Asn Met Asn Glu Ile His Ser Tyr Leu Lys Thr Glu Tyr
 20 25 30
 Phe Thr Ala Lys Thr Leu Asn Ile Ser Arg Ala Tyr His Ile Leu Asn
 35 40 45
 Thr Leu Trp Ser Cys Ser Tyr Phe Asn Ile Pro Gly Ser Gly Gly Gln
 50 55 60
 Leu Ala Cys Leu Trp Leu Arg Ile Cys Phe His Ala Cys Phe Leu Ser
 65 70 75 80
 Phe Phe Tyr Leu

<210> 548
<211> 67
<212> PRT
<213> Homo sapiens

<400> 548
Met Ala Pro Ser Gly Pro Leu Leu Leu Val Leu Leu Val Pro Leu Ala
1 5 10 15
Ala Ala Arg Pro Gly Pro Thr Ser Val Pro Ala Gly Ala Ala Ala Cys
20 25 30
Pro Cys Gly Gly Thr Ser Cys Arg Gly Trp Gly Ala Gly Pro Thr Pro
35 40 45
Gly Arg Thr Ser Thr Cys Pro His Leu Thr Cys Pro Arg Ala Gly Thr
50 55 60
Gly Ala Thr
65

<210> 549
<211> 14
<212> PRT
<213> Homo sapiens

<400> 549
Pro Gln Gly Pro Asn Asp Val Thr Ala Lys Leu Leu Cys Pro
1 5 10

<210> 550
<211> 6
<212> PRT
<213> Homo sapiens

<400> 550
Met Leu Leu Leu Tyr Leu
1 5

<210> 551
<211> 161
<212> PRT
<213> Homo sapiens

<220>
<221> SITE
<222> (123)
<223> Xaa equals any amino acid

<220>
<221> SITE

<222> (129)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (145)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (146)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (157)

<223> Xaa equals any amino acid

<400> 551

Met	Thr	Thr	Trp	Ser	Cys	Leu	Val	Ala	Met	Ile	Val	Ser	Gly	Val	Ile
1				5					10					15	

Thr	Ala	Val	Trp	Ala	Val	Arg	Ala	Ala	Pro	Ile	Trp	Arg	Ser	Gln	Val
		20					25						30		

Lys	Gln	Lys	Met	Arg	Ile	Gly	Lys	Gln	Gly	Asn	Cys	Arg	Pro	Pro	Arg
		35				40					45				

Cys	Ile	Cys	Ser	Ala	Leu	Gly	Leu	Leu	Ala	Pro	Trp	Met	Ala	Val	Val
	50				55					60					

Leu	Ser	Gln	Leu	Ser	Val	Arg	Cys	Val	Val	Ser	Trp	Val	Gln	Gly	Lys
65					70					75					80

Pro	Ser	Ser	Pro	Arg	Pro	Arg	Gly	Ser	Ala	Ala	Ser	Pro	Ala	Pro	Gly
				85					90					95	

Ala	Thr	Pro	Pro	Thr	Pro	Arg	Lys	Pro	Val	Ser	Trp	Leu	Gly	Tyr	Arg
		100					105						110		

Glu	Asn	His	Arg	Pro	Lys	Lys	Pro	Lys	Ser	Xaa	Thr	Arg	Cys	Leu	Val
		115				120						125			

Xaa	Gln	Asn	Trp	Ser	Leu	Pro	Pro	Ile	Ser	Lys	Asp	Arg	Thr	Ala	Gly
	130				135						140				

Xaa	Xaa	Asp	Thr	Asn	Arg	Thr	Arg	Arg	Ser	Gly	Leu	Xaa	Leu	Arg	Leu
145				150						155				160	

Gly

<210> 552

<211> 325

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (10)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (136)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (186)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (234)

<223> Xaa equals any amino acid

<400> 552

Val	Pro	Pro	Ala	Val	Cys	Pro	Ala	Gly	Xaa	Phe	Cys	Gln	Asn	Gln	Cys
1				5					10					15	

Phe	Thr	Lys	Arg	Gln	Tyr	Pro	Glu	Thr	Lys	Ile	Ile	Lys	Thr	Asp	Gly
			20					25					30		

Lys	Gly	Trp	Gly	Leu	Val	Ala	Lys	Arg	Asp	Ile	Arg	Lys	Gly	Glu	Phe
		35					40					45			

Val	Asn	Glu	Tyr	Val	Gly	Glu	Leu	Ile	Asp	Glu	Glu	Glu	Cys	Met	Ala
	50					55				60					

Arg	Ile	Lys	His	Ala	His	Glu	Asn	Asp	Ile	Thr	His	Phe	Tyr	Met	Leu
65					70					75					80

Thr	Ile	Asp	Lys	Asp	Arg	Ile	Ile	Asp	Ala	Gly	Pro	Lys	Gly	Asn	Tyr
			85						90					95	

Ser	Arg	Phe	Met	Asn	His	Ser	Cys	Gln	Pro	Asn	Cys	Glu	Thr	Leu	Lys
			100					105					110		

Trp	Thr	Val	Asn	Gly	Asp	Thr	Arg	Val	Gly	Leu	Phe	Ala	Val	Cys	Asp
		115					120					125			

Ile	Pro	Ala	Gly	Thr	Glu	Leu	Xaa	Phe	Asn	Tyr	Asn	Leu	Asp	Cys	Leu
	130					135					140				

Gly	Asn	Glu	Lys	Thr	Val	Cys	Arg	Cys	Gly	Ala	Ser	Asn	Cys	Ser	Gly
145					150					155					160

Phe	Leu	Gly	Asp	Arg	Pro	Lys	Thr	Ser	Thr	Thr	Leu	Ser	Ser	Glu	Glu
			165						170					175	

Lys	Gly	Lys	Lys	Thr	Lys	Lys	Lys	Thr	Xaa	Arg	Arg	Arg	Ala	Lys	Gly
			180					185					190		

Glu	Gly	Lys	Arg	Gln	Ser	Glu	Asp	Glu	Cys	Phe	Arg	Cys	Gly	Asp	Gly
		195					200					205			

Gly	Gln	Leu	Val	Leu	Cys	Asp	Arg	Lys	Phe	Cys	Thr	Lys	Ala	Tyr	His
	210					215					220				

Leu Ser Cys Leu Gly Leu Gly Lys Arg Xaa Phe Gly Lys Trp Glu Cys
 225 230 235 240
 Pro Trp His His Cys Asp Val Cys Gly Lys Pro Ser Thr Ser Phe Cys
 245 250 255
 His Leu Cys Pro Asn Ser Phe Cys Lys Glu His Gln Asp Gly Thr Ala
 260 265 270
 Phe Ser Cys Thr Pro Asp Gly Arg Ser Tyr Cys Cys Glu His Asp Leu
 275 280 285
 Gly Ala Ala Ser Val Arg Ser Thr Lys Thr Glu Lys Pro Pro Pro Glu
 290 295 300
 Pro Gly Lys Pro Lys Gly Lys Arg Arg Arg Arg Arg Gly Trp Arg Arg
 305 310 315 320
 Val Thr Glu Gly Lys
 325

<210> 553
 <211> 40
 <212> PRT
 <213> Homo sapiens

<400> 553
 Met Val Ala Met Val Phe Leu Lys Ile Ser Val Leu Pro Leu Met Cys
 1 5 10 15
 Arg Gly Gln Thr Lys His Lys Val Leu Arg Asp His Ala Tyr Pro Arg
 20 25 30
 Val Ser Gln Lys Arg Gly His Ile
 35 40

<210> 554
 <211> 173
 <212> PRT
 <213> Homo sapiens

<400> 554
 Met Val Phe Leu Lys Phe Phe Cys Met Ser Phe Phe Cys His Leu Cys
 1 5 10 15
 Gln Gly Tyr Phe Asp Gly Pro Leu Tyr Pro Glu Met Ser Asn Gly Thr
 20 25 30
 Leu His His Tyr Phe Val Pro Asp Gly Asp Tyr Glu Glu Asn Asp Asp
 35 40 45
 Pro Glu Lys Cys Gln Leu Leu Phe Arg Val Ser Asp His Arg Arg Cys
 50 55 60
 Ser Gln Gly Glu Gly Ser Gln Val Gly Ser Leu Leu Ser Leu Thr Leu
 65 70 75 80

Arg Glu Glu Phe Thr Val Leu Gly His Gln Val Glu Gly Cys Trp Ala
 85 90 95
 Arg Ala Gly Gly His Gln Gln Lys His Leu Leu Arg Pro Arg Arg Gly
 100 105 110
 Arg Glu Leu Trp Gln Val Pro Ala Ala Gly Val Pro Pro Asp Arg Gly
 115 120 125
 Met Pro Thr Pro Thr Arg Thr Asn Pro Ser Leu Ser Trp Arg Ala Ser
 130 135 140
 Ser Ser Arg Ala Arg Asn Arg Thr Ala Gly Arg Arg Ala Gly Ser Thr
 145 150 155 160
 Arg Thr Phe Trp Glu Cys Trp Ser Thr Pro Gly Pro Cys
 165 170

<210> 555
 <211> 48
 <212> PRT
 <213> Homo sapiens

<400> 555
 Met Met Leu Tyr Gln Asn Met Leu Leu Tyr Phe Arg Ile Ile Gly Val
 1 5 10 15
 Leu Ala Leu Asn Phe Ser Ile Ser Pro Ile Phe Phe His Gly Ser Leu
 20 25 30
 Gly Lys Leu Tyr Val Tyr Ser Ala Ala Lys Tyr Ser Leu Glu Leu Lys
 35 40 45

<210> 556
 <211> 10
 <212> PRT
 <213> Homo sapiens

<400> 556
 Ile Tyr Gln His Phe Ser Leu Trp Leu Gly
 1 5 10

<210> 557
 <211> 4
 <212> PRT
 <213> Homo sapiens

<400> 557
 Met Phe Lys Met
 1

<210> 558
 <211> 201
 <212> PRT
 <213> Homo sapiens

<400> 558
 Met Lys Leu Leu Ile Leu Phe Leu Ser His Leu Leu Ser Leu Ala Phe
 1 5 10 15
 Gly Ile Leu Cys Leu Ser Val Thr Val Ile Leu Ser Leu Leu Leu Ser
 20 25 30
 Phe Ser Lys Arg Gly Phe Ser Val Arg Ser Phe Gly Thr Gly Thr His
 35 40 45
 Val Lys Leu Pro Gly Pro Ala Pro Asp Lys Pro Asn Val Tyr Asp Phe
 50 55 60
 Lys Thr Thr Tyr Asp Gln Met Tyr Asn Asp Leu Leu Arg Lys Asp Lys
 65 70 75 80
 Glu Leu Tyr Thr Gln Asn Gly Ile Leu His Met Leu Asp Arg Asn Lys
 85 90 95
 Arg Ile Lys Pro Arg Pro Glu Arg Phe Gln Asn Cys Lys Asp Leu Phe
 100 105 110
 Asp Leu Ile Leu Thr Cys Glu Glu Arg Val Tyr Asp Gln Val Val Glu
 115 120 125
 Asp Leu Asn Ser Arg Glu Gln Glu Thr Cys Gln Pro Val His Val Val
 130 135 140
 Asn Val Asp Ile Gln Asp Asn His Glu Glu Ala Thr Leu Gly Ala Phe
 145 150 155 160
 Leu Ile Cys Glu Leu Cys Gln Cys Ile Gln His Thr Glu Asp Met Glu
 165 170 175
 Asn Glu Ile Asp Glu Leu Leu Gln Glu Phe Glu Glu Lys Ser Gly Arg
 180 185 190
 Thr Phe Leu His Thr Val Cys Phe Tyr
 195 200

<210> 559
 <211> 392
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (251)
 <223> Xaa equals any amino acid

<400> 559
 Met Ala Pro Trp Pro Pro Lys Gly Leu Val Pro Ala Val Leu Trp Gly
 1 5 10 15

Leu Ser Leu Phe Leu Asn Leu Pro Gly Pro Ile Trp Leu Gln Pro Ser
 20 25 30
 Pro Pro Pro Gln Ser Ser Pro Pro Pro Gln Pro His Pro Cys His Thr
 35 40 45
 Cys Arg Gly Leu Val Asp Ser Phe Asn Lys Gly Leu Glu Arg Thr Ile
 50 55 60
 Arg Asp Asn Phe Gly Gly Gly Asn Thr Ala Trp Glu Glu Glu Asn Leu
 65 70 75 80
 Ser Lys Tyr Lys Asp Ser Glu Thr Arg Leu Val Glu Val Leu Glu Gly
 85 90 95
 Val Cys Ser Lys Ser Asp Phe Glu Cys His Arg Leu Leu Glu Leu Ser
 100 105 110
 Glu Glu Leu Val Glu Ser Trp Trp Phe His Lys Gln Gln Glu Ala Pro
 115 120 125
 Asp Leu Phe Gln Trp Leu Cys Ser Asp Ser Leu Lys Leu Cys Cys Pro
 130 135 140
 Ala Gly Thr Phe Gly Pro Ser Cys Leu Pro Cys Pro Gly Gly Thr Glu
 145 150 155 160
 Arg Pro Cys Gly Gly Tyr Gly Gln Cys Glu Gly Glu Gly Thr Arg Gly
 165 170 175
 Gly Ser Gly His Cys Asp Cys Gln Ala Gly Tyr Gly Gly Glu Ala Cys
 180 185 190
 Gly Gln Cys Gly Leu Gly Tyr Phe Glu Ala Glu Arg Asn Ala Ser His
 195 200 205
 Leu Val Cys Ser Ala Cys Phe Gly Pro Cys Ala Arg Cys Ser Gly Pro
 210 215 220
 Glu Glu Ser Asn Cys Leu Gln Cys Lys Lys Gly Trp Ala Leu His His
 225 230 235 240
 Leu Lys Cys Val Asp Cys Ala Lys Ala Cys Xaa Gly Cys Met Gly Ala
 245 250 255
 Gly Pro Gly Arg Cys Lys Lys Cys Ser Pro Gly Tyr Gln Gln Val Gly
 260 265 270
 Ser Lys Cys Leu Asp Val Asp Glu Cys Glu Thr Glu Val Cys Pro Gly
 275 280 285
 Glu Asn Lys Gln Cys Glu Asn Thr Glu Gly Gly Tyr Arg Cys Ile Cys
 290 295 300
 Ala Glu Gly Tyr Lys Gln Met Glu Gly Ile Cys Val Lys Glu Gln Ile
 305 310 315 320
 Pro Glu Ser Ala Gly Phe Phe Ser Glu Met Thr Glu Asp Glu Leu Val
 325 330 335

Val Leu Gln Gln Met Phe Phe Gly Ile Ile Ile Cys Ala Leu Ala Thr
 340 345 350
 Leu Ala Ala Lys Gly Asp Leu Val Phe Thr Ala Ile Phe Ile Gly Ala
 355 360 365
 Val Ala Ala Met Thr Gly Tyr Trp Leu Ser Glu Arg Ser Asp Arg Val
 370 375 380
 Leu Glu Gly Phe Ile Lys Gly Arg
 385 390

<210> 560
 <211> 63
 <212> PRT
 <213> Homo sapiens

<400> 560
 Met Thr Glu Asp Glu Leu Val Val Leu Gln Gln Met Phe Phe Gly Ile
 1 5 10 15
 Ile Ile Cys Ala Leu Ala Thr Leu Ala Ala Lys Gly Asp Leu Val Phe
 20 25 30
 Thr Ala Ile Phe Ile Gly Ala Val Ala Ala Met Thr Gly Tyr Trp Leu
 35 40 45
 Ser Glu Arg Ser Asp Arg Val Leu Glu Gly Phe Ile Lys Gly Arg
 50 55 60

<210> 561
 <211> 102
 <212> PRT
 <213> Homo sapiens

<400> 561
 Met Thr Val Arg Arg Leu Ser Leu Leu Cys Arg Asp Leu Trp Ala Leu
 1 5 10 15
 Trp Leu Leu Leu Lys Ala Gly Ala Val Arg Gly Ala Arg Ala Gly Pro
 20 25 30
 Arg Leu Pro Gly Arg Cys Cys Gly Ala Thr Cys Gly Asp Ala Gly Arg
 35 40 45
 Gly Trp Thr Phe Trp Ala Gln Pro Cys Pro Gln Lys Leu Leu Gly Gln
 50 55 60
 Lys Pro Gly Ala Gly Gly Cys Arg Gly Trp Val Leu Gly Trp Val Pro
 65 70 75 80
 Pro Arg Pro Glu Glu Pro Cys Ser Leu Ala Gly Lys Val Cys Thr Gly
 85 90 95
 Leu Ala Arg Trp Met Val
 100

<210> 562
 <211> 53
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (41)
 <223> Xaa equals any amino acid

<400> 562
 Met Cys Lys Ala Val Cys Lys His Arg Leu Arg Leu Phe Ala Val Ser
 1 5 10 15
 Ser Phe Ser Leu Gly Leu Gly Trp Val Cys Val Leu Val Leu Met Leu
 20 25 30
 Trp Pro Val Arg Leu Ser Leu Ala Xaa Arg Pro Val Gln Leu Gln Gln
 35 40 45
 Arg Arg Ser His Cys
 50

<210> 563
 <211> 472
 <212> PRT
 <213> Homo sapiens

<400> 563
 Met Lys Phe Leu Ile Phe Ala Phe Phe Gly Gly Val His Leu Leu Ser
 1 5 10 15
 Leu Cys Ser Gly Lys Ala Ile Cys Lys Asn Gly Ile Ser Lys Arg Thr
 20 25 30
 Phe Glu Glu Ile Lys Glu Glu Ile Ala Ser Cys Gly Asp Val Ala Lys
 35 40 45
 Ala Ile Ile Asn Leu Ala Val Tyr Gly Lys Ala Gln Asn Arg Ser Tyr
 50 55 60
 Glu Arg Leu Ala Leu Leu Val Asp Thr Val Gly Pro Arg Leu Ser Gly
 65 70 75 80
 Ser Lys Asn Leu Glu Lys Ala Ile Gln Ile Met Tyr Gln Asn Leu Gln
 85 90 95
 Gln Asp Gly Leu Glu Lys Val His Leu Glu Pro Val Arg Ile Pro His
 100 105 110
 Trp Glu Arg Gly Glu Glu Ser Ala Val Met Leu Glu Pro Arg Ile His
 115 120 125
 Lys Ile Ala Ile Leu Gly Leu Gly Ser Ser Ile Gly Thr Pro Pro Glu
 130 135 140
 Gly Ile Thr Ala Glu Val Leu Val Val Thr Ser Phe Asp Glu Leu Gln

145		150		155		160
Arg Arg Ala Ser Glu Ala Arg Gly Lys Ile Val Val Tyr Asn Gln Pro						
	165			170		175
Tyr Ile Asn Tyr Ser Arg Thr Val Gln Tyr Arg Thr Gln Gly Ala Val						
	180		185			190
Glu Ala Ala Lys Val Gly Ala Leu Ala Ser Leu Ile Arg Ser Val Ala						
	195		200			205
Ser Phe Ser Ile Tyr Ser Pro His Thr Gly Ile Gln Glu Tyr Gln Asp						
	210		215			220
Gly Val Pro Lys Ile Pro Thr Ala Cys Ile Thr Val Glu Asp Ala Glu						
	225		230		235	240
Met Met Ser Arg Met Ala Ser His Gly Ile Lys Ile Val Ile Gln Leu						
		245		250		255
Lys Met Gly Ala Lys Thr Tyr Pro Asp Thr Asp Ser Phe Asn Thr Val						
	260		265			270
Ala Glu Ile Thr Gly Ser Lys Tyr Pro Glu Gln Val Val Leu Val Ser						
	275		280			285
Gly His Leu Asp Ser Trp Asp Val Gly Gln Gly Ala Met Asp Asp Gly						
	290		295			300
Gly Gly Ala Phe Ile Ser Trp Glu Ala Leu Ser Leu Ile Lys Asp Leu						
	305		310		315	320
Gly Leu Arg Pro Lys Arg Thr Leu Arg Leu Val Leu Trp Thr Ala Glu						
		325		330		335
Glu Gln Gly Gly Val Gly Ala Phe Gln Tyr Tyr Gln Leu His Lys Val						
	340		345			350
Asn Ile Ser Asn Tyr Ser Leu Val Met Glu Ser Asp Ala Gly Thr Phe						
	355		360			365
Leu Pro Thr Gly Leu Gln Phe Thr Gly Ser Glu Lys Ala Arg Ala Ile						
	370		375			380
Met Glu Glu Val Met Ser Leu Leu Gln Pro Leu Asn Ile Thr Gln Val						
	385		390		395	400
Leu Ser His Gly Glu Gly Thr Asp Ile Asn Phe Trp Ile Gln Ala Gly						
		405		410		415
Val Pro Gly Ala Ser Leu Leu Asp Asp Leu Tyr Lys Tyr Phe Phe Phe						
	420		425			430
His His Ser His Gly Asp Thr Met Thr Val Met Asp Pro Lys Gln Met						
	435		440			445
Asn Val Ala Ala Ala Val Trp Ala Val Val Ser Tyr Val Val Ala Asp						
	450		455			460
Met Glu Glu Met Leu Pro Arg Ser						
	465		470			

<210> 564
 <211> 178
 <212> PRT
 <213> Homo sapiens

<400> 564
 Ser Ile Tyr Ser Pro His Thr Gly Ile Gln Glu Tyr Gln Asp Gly Val
 1 5 10 15
 Pro Lys Ile Pro Thr Ala Cys Ile Thr Val Glu Asp Ala Glu Met Met
 20 25 30
 Ser Arg Met Ala Ser His Gly Ile Lys Ile Val Ile Gln Leu Lys Met
 35 40 45
 Gly Ala Lys Thr Tyr Pro Asp Thr Asp Ser Phe Asn Thr Val Ala Glu
 50 55 60
 Ile Thr Gly Ser Lys Tyr Pro Glu Gln Val Val Leu Val Ser Gly His
 65 70 75 80
 Leu Asp Ser Trp Asp Val Gly Gln Gly Ala Met Asp Asp Gly Gly Gly
 85 90 95
 Ala Phe Ile Ser Trp Glu Ala Leu Ser Leu Ile Lys Asp Leu Gly Leu
 100 105 110
 Arg Pro Lys Arg Thr Leu Arg Leu Val Leu Trp Thr Ala Glu Glu Gln
 115 120 125
 Gly Gly Val Gly Ala Phe Gln Tyr Tyr Gln Leu His Lys Val Asn Ile
 130 135 140
 Ser Asn Tyr Ser Leu Val Met Glu Ser Asp Ala Gly Thr Phe Leu Pro
 145 150 155 160
 Thr Gly Leu Gln Phe Thr Gly Ser Glu Lys Ala Arg Ala Ser Trp Arg
 165 170 175
 Arg Leu

<210> 565
 <211> 199
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (142)
 <223> Xaa equals any amino acid

<400> 565
 Met Lys Leu Gly Cys Val Leu Met Ala Trp Ala Leu Tyr Leu Ser Leu
 1 5 10 15

Gly Val Leu Trp Val Ala Gln Met Leu Leu Ala Ala Ser Phe Glu Thr
 20 25 30
 Leu Gln Cys Glu Gly Pro Val Cys Thr Glu Glu Ser Ser Cys His Thr
 35 40 45
 Glu Asp Asp Leu Thr Asp Ala Arg Glu Ala Gly Phe Gln Val Lys Ala
 50 55 60
 Tyr Thr Phe Ser Glu Pro Phe His Leu Ile Val Ser Tyr Asp Trp Leu
 65 70 75 80
 Ile Leu Gln Gly Pro Ala Lys Pro Val Phe Glu Gly Asp Leu Leu Val
 85 90 95
 Leu Arg Cys Gln Ala Trp Gln Asp Trp Pro Leu Thr Gln Val Thr Phe
 100 105 110
 Tyr Arg Asp Gly Ser Ala Leu Gly Pro Pro Gly Pro Asn Arg Glu Phe
 115 120 125
 Ser Ile Thr Val Val Gln Lys Ala Asp Ser Gly His Tyr Xaa Cys Ser
 130 135 140
 Gly Ile Phe Gln Ser Pro Gly Pro Gly Ile Pro Glu Thr Ala Ser Val
 145 150 155 160
 Val Ala Ile Thr Val Gln Glu Leu Phe Pro Ala Pro Ile Leu Leu Leu
 165 170 175
 Gln Gly Trp Lys Asp Ser Ala Lys Gln Gly Gly Ser Pro Gln Asn Ser
 180 185 190
 Arg Ser Pro Gln Leu Gln Lys
 195

<210> 566
 <211> 2
 <212> PRT
 <213> Homo sapiens

<400> 566
 Ser Trp
 1

<210> 567
 <211> 32
 <212> PRT
 <213> Homo sapiens

<400> 567
 Cys Leu Glu Thr Phe Trp Ser Leu Tyr Leu Gly Gly Trp Gly Met Val
 1 5 10 15
 Gly Cys Val Cys Tyr Trp His Pro Val Asn Arg Ser Gln Gly Cys Arg
 20 25 30

<210> 568

<211> 283

<212> PRT

<213> Homo sapiens

<400> 568

```

Met Tyr Leu Ser Ala Leu Gln Ser Leu Ile Pro Ser Leu Phe Ala Leu
  1           5           10           15

Val Leu Gln Asn Ala Pro Phe Ser Ser Lys Ala Lys Leu His Gly Glu
          20           25           30

Val Pro Gln Ile Glu Val Thr Arg Phe Pro Arg Pro Met Ser Pro Leu
          35           40           45

Gln Asp Val Ser Thr Ile Ile Gly Ser Arg Glu Gln Leu Ala Val Leu
  50           55           60

Leu Gln Leu Tyr Asp Tyr Gln Leu Glu Gln Glu Gly Thr Thr Gly Trp
  65           70           75           80

Glu Ser Leu Leu Trp Val Val Asn Gln Leu Leu Pro Gln Leu Ile Glu
          85           90           95

Ile Val Gly Lys Ile Asn Val Thr Ser Thr Ala Cys Val His Glu Phe
          100          105          110

Ser Arg Phe Phe Trp Arg Leu Cys Arg Thr Phe Gly Lys Ile Phe Thr
          115          120          125

Asn Thr Lys Val Lys Pro Gln Phe Gln Glu Ile Leu Arg Leu Ser Glu
          130          135          140

Glu Asn Ile Asp Ser Ser Ala Gly Asn Gly Val Leu Thr Lys Ala Thr
          145          150          155          160

Val Pro Ile Tyr Ala Thr Gly Val Leu Thr Cys Tyr Ile Gln Glu Glu
          165          170          175

Asp Arg Lys Leu Leu Val Gly Phe Leu Glu Asp Val Met Thr Leu Leu
          180          185          190

Ser Leu Ser His Ala Pro Leu Asp Ser Leu Lys Ala Ser Phe Val Glu
          195          200          205

Leu Gly Ala Asn Pro Ala Tyr His Glu Leu Leu Leu Thr Val Leu Trp
          210          215          220

Tyr Gly Val Val His Thr Ser Ala Leu Val Arg Cys Thr Ala Ala Arg
          225          230          235          240

Met Phe Glu Val Cys Gln His Met Pro Leu Leu Val Ser Ile Ile Met
          245          250          255

Ile Phe Phe Phe Leu Arg Arg Arg Arg Glu Phe Phe Leu Ile Lys Arg
          260          265          270

```

Leu Cys Ile Ser Lys Lys Lys Lys Lys Lys Lys
 275 280

<210> 569
 <211> 286
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (204)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (224)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (228)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (264)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (271)
 <223> Xaa equals any amino acid

<400> 569
 Met Tyr Leu Ser Ala Leu Gln Ser Leu Ile Pro Ser Leu Phe Ala Leu
 1 5 10 15
 Val Leu Gln Asn Ala Pro Phe Ser Ser Lys Ala Lys Leu His Gly Glu
 20 25 30
 Val Pro Gln Ile Glu Val Thr Arg Phe Pro Arg Pro Met Ser Pro Leu
 35 40 45
 Gln Asp Val Ser Thr Ile Ile Gly Ser Arg Glu Gln Leu Ala Val Leu
 50 55 60
 Leu Gln Leu Tyr Asp Tyr Gln Leu Glu Gln Glu Gly Thr Thr Gly Trp
 65 70 75 80
 Glu Ser Leu Leu Trp Val Val Asn Gln Leu Leu Pro Gln Leu Ile Glu
 85 90 95
 Ile Val Gly Lys Ile Asn Val Thr Ser Thr Ala Cys Val His Glu Phe
 100 105 110
 Ser Arg Phe Phe Trp Arg Leu Cys Arg Thr Phe Gly Lys Ile Phe Thr
 115 120 125

Asn Thr Lys Val Lys Pro Gln Phe Gln Glu Ile Leu Arg Leu Ser Glu
 130 135 140
 Glu Asn Ile Asp Ser Ser Ala Gly Asn Gly Val Leu Thr Lys Ala Thr
 145 150 155 160
 Val Pro Ile Tyr Ala Thr Gly Val Leu Thr Cys Tyr Ile Gln Glu Glu
 165 170 175
 Asp Arg Lys Leu Leu Val Gly Phe Leu Glu Asp Val Met Thr Leu Leu
 180 185 190
 Ser Leu Ser His Ala Pro Leu Asp Ser Leu Lys Xaa Ser Phe Val Glu
 195 200 205
 Leu Gly Ala Asn Gln Ala Tyr His Glu Leu Leu Leu Thr Val Leu Xaa
 210 215 220
 Tyr Gly Val Xaa His Thr Ser Ala Leu Val Arg Cys Thr Ala Ala Arg
 225 230 235 240
 Met Phe Glu Leu Leu Val Lys Gly Val Asn Glu Thr Leu Val Ala Gln
 245 250 255
 Arg Val Val Pro Ala Leu His Xaa Leu Ser Pro Val Asp Pro Xaa Asn
 260 265 270
 Leu Cys Gln Asp Cys His Asn Phe Gln Pro Leu Gly Leu Phe
 275 280 285

<210> 570

<211> 45

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (43)

<223> Xaa equals any amino acid

<400> 570

Met Gln Ala Pro Leu Gln Asp Cys Gly Arg Ser Val Ser Leu Arg Leu
 1 5 10 15

Ala Cys Val Leu Ala Pro Leu Thr Thr Ser Ser Arg Gly Cys His Leu
 20 25 30

Gln Leu Pro Gln Asp Lys Gly Lys Ala Arg Xaa Asp Ser
 35 40 45

<210> 571

<211> 305

<212> PRT

<213> Homo sapiens

<400> 571

Met Gly Ile Leu Leu Gly Leu Leu Leu Leu Gly His Leu Thr Val Asp

1	5	10	15
Thr Tyr Gly Arg Pro Ile Leu Glu Val Pro Glu Ser Val Thr Gly Pro	20	25	30
Trp Lys Gly Asp Val Asn Leu Pro Cys Thr Tyr Asp Pro Leu Gln Gly	35	40	45
Tyr Thr Gln Val Leu Val Lys Trp Leu Val Gln Arg Gly Ser Asp Pro	50	55	60
Val Thr Ile Phe Leu Arg Asp Ser Ser Gly Asp His Ile Gln Gln Ala	65	70	75
Lys Tyr Gln Gly Arg Leu His Val Ser His Lys Val Pro Gly Asp Val	85	90	95
Ser Leu Gln Leu Ser Thr Leu Glu Met Asp Asp Arg Ser His Tyr Thr	100	105	110
Cys Glu Val Thr Trp Gln Thr Pro Asp Gly Asn Gln Val Val Arg Asp	115	120	125
Lys Ile Thr Glu Leu Arg Val Gln Lys His Ser Ser Lys Leu Leu Lys	130	135	140
Thr Lys Thr Glu Ala Pro Thr Thr Met Thr Tyr Pro Leu Lys Ala Thr	145	150	155
Ser Thr Val Lys Gln Ser Trp Asp Trp Thr Thr Asp Met Asp Gly Tyr	165	170	175
Leu Gly Glu Thr Ser Ala Gly Pro Gly Lys Ser Leu Pro Val Phe Ala	180	185	190
Ile Ile Leu Ile Ile Ser Leu Cys Cys Met Val Val Phe Thr Met Ala	195	200	205
Tyr Ile Met Leu Cys Arg Lys Thr Ser Gln Gln Glu His Val Tyr Glu	210	215	220
Ala Ala Arg Ala His Ala Arg Glu Ala Asn Asp Ser Gly Glu Thr Met	225	230	235
Arg Val Ala Ile Phe Ala Ser Gly Cys Ser Ser Asp Glu Pro Thr Ser	245	250	255
Gln Asn Leu Gly Asn Asn Tyr Ser Asp Glu Pro Cys Ile Gly Gln Glu	260	265	270
Tyr Gln Ile Ile Ala Gln Ile Asn Gly Asn Tyr Ala Arg Leu Leu Asp	275	280	285
Thr Val Pro Leu Asp Tyr Glu Phe Leu Ala Thr Glu Gly Lys Ser Val	290	295	300
Cys			
305			

<210> 572

<211> 72

<212> PRT

<213> Homo sapiens

<400> 572

```

Met Lys Phe Val Pro Cys Leu Leu Leu Val Thr Leu Ser Cys Leu Gly
 1              5              10              15

Thr Leu Gly Gln Ala Pro Arg Gln Lys Gln Gly Ser Thr Gly Glu Glu
              20              25              30

Phe His Phe Gln Thr Gly Gly Arg Asp Ser Cys Thr Met Arg Pro Ser
      35              40              45

Ser Leu Gly Gln Gly Ala Gly Glu Val Trp Leu Arg Val Arg Leu Pro
      50              55              60

Gln His Arg Pro Asp Leu Leu Val
 65              70

```

<210> 573

<211> 121

<212> PRT

<213> Homo sapiens

<400> 573

```

Met Gly Leu Trp Leu Gly Met Leu Ala Cys Val Phe Leu Ala Thr Ala
 1              5              10              15

Ala Phe Val Ala Tyr Thr Ala Arg Leu Asp Trp Lys Leu Ala Ala Glu
      20              25              30

Glu Ala Lys Lys His Ser Gly Arg Gln Gln Gln Gln Arg Ala Glu Ser
      35              40              45

Thr Ala Thr Arg Pro Gly Pro Glu Lys Ala Val Leu Ser Ser Val Ala
      50              55              60

Thr Gly Ser Ser Pro Gly Ile Thr Leu Thr Thr Tyr Ser Arg Ser Glu
 65              70              75              80

Cys His Val Asp Phe Phe Arg Thr Pro Glu Glu Ala His Ala Leu Ser
      85              90              95

Ala Pro Thr Ser Arg Leu Ser Val Lys Gln Leu Val Ile Arg Arg Gly
      100              105              110

Ala Ala Leu Gly Ala Ala Ser Ala His
 115              120

```

<210> 574

<211> 509

<212> PRT

<213> Homo sapiens

<400> 574

Met Thr Trp Arg Met Gly Pro Arg Phe Thr Met Leu Leu Ala Met Trp
 1 5 10 15
 Leu Val Cys Gly Ser Glu Pro His Pro His Ala Thr Ile Arg Gly Ser
 20 25 30
 His Gly Gly Arg Lys Val Pro Leu Val Ser Pro Asp Ser Ser Arg Pro
 35 40 45
 Ala Arg Phe Leu Arg His Thr Gly Arg Ser Arg Gly Ile Glu Arg Ser
 50 55 60
 Thr Leu Glu Glu Pro Asn Leu Gln Pro Leu Gln Arg Arg Arg Ser Val
 65 70 75 80
 Pro Val Leu Arg Leu Ala Arg Pro Thr Glu Pro Pro Ala Arg Ser Asp
 85 90 95
 Ile Asn Gly Ala Ala Val Arg Pro Glu Gln Arg Pro Ala Ala Arg Gly
 100 105 110
 Ser Pro Arg Glu Met Ile Arg Asp Glu Gly Ser Ser Ala Arg Ser Arg
 115 120 125
 Met Leu Arg Phe Pro Ser Gly Ser Ser Ser Pro Asn Ile Leu Ala Ser
 130 135 140
 Phe Ala Gly Lys Asn Arg Val Trp Val Ile Ser Ala Pro His Ala Ser
 145 150 155 160
 Glu Gly Tyr Tyr Arg Leu Met Met Ser Leu Leu Lys Asp Asp Val Tyr
 165 170 175
 Cys Glu Leu Ala Glu Arg His Ile Gln Gln Ile Val Leu Phe His Gln
 180 185 190
 Ala Gly Glu Glu Gly Gly Lys Val Arg Arg Ile Thr Ser Glu Gly Gln
 195 200 205
 Ile Leu Glu Gln Pro Leu Asp Pro Ser Leu Ile Pro Lys Leu Met Ser
 210 215 220
 Phe Leu Lys Leu Glu Lys Gly Lys Phe Gly Met Val Leu Leu Lys Lys
 225 230 235 240
 Thr Leu Gln Val Glu Glu Arg Tyr Pro Tyr Pro Val Arg Leu Glu Ala
 245 250 255
 Met Tyr Glu Val Ile Asp Gln Gly Pro Ile Arg Arg Ile Glu Lys Ile
 260 265 270
 Arg Gln Lys Gly Phe Val Gln Lys Cys Lys Ala Ser Gly Val Glu Gly
 275 280 285
 Gln Val Val Ala Glu Gly Asn Asp Gly Gly Gly Gly Ala Gly Arg Pro
 290 295 300
 Ser Leu Gly Ser Glu Lys Lys Lys Glu Asp Pro Arg Arg Ala Gln Val
 305 310 315 320
 Pro Pro Thr Arg Glu Ser Arg Val Lys Val Leu Arg Lys Leu Ala Ala

325 330 335
 Thr Ala Pro Ala Phe Pro Gln Pro Pro Ser Thr Pro Arg Ala Thr Thr
 340 345 350
 Leu Pro Pro Ala Pro Ala Thr Thr Val Thr Arg Ser Thr Ser Arg Ala
 355 360 365
 Val Thr Val Ala Ala Arg Pro Met Thr Thr Thr Ala Phe Pro Thr Thr
 370 375 380
 Gln Arg Pro Trp Thr Pro Ser Pro Ser His Arg Pro Pro Thr Thr Thr
 385 390 395 400
 Glu Val Ile Thr Ala Arg Arg Pro Ser Val Ser Glu Asn Leu Tyr Pro
 405 410 415
 Pro Ser Arg Lys Asp Gln His Arg Glu Arg Pro Gln Thr Thr Arg Arg
 420 425 430
 Pro Ser Lys Ala Thr Ser Leu Glu Ser Phe Thr Asn Ala Pro Pro Thr
 435 440 445
 Thr Ile Ser Glu Pro Ser Thr Arg Ala Ala Gly Pro Gly Arg Phe Arg
 450 455 460
 Asp Asn Arg Met Asp Arg Arg Glu His Gly His Arg Asp Pro Asn Val
 465 470 475 480
 Val Pro Gly Pro Pro Lys Pro Ala Lys Glu Lys Pro Pro Lys Lys Lys
 485 490 495
 Ala Gln Asp Lys Ile Leu Ser Asn Glu Tyr Glu Glu Val
 500 505

<210> 575

<211> 554

<212> PRT

<213> Homo sapiens

<400> 575

Met Gly Pro Arg Phe Thr Met Leu Leu Ala Met Trp Leu Val Cys Gly
 1 5 10 15
 Ser Glu Pro His Pro His Ala Thr Ile Arg Gly Ser His Gly Gly Arg
 20 25 30
 Lys Val Pro Leu Val Ser Pro Asp Ser Ser Arg Pro Ala Arg Phe Leu
 35 40 45
 Arg His Thr Gly Arg Ser Arg Gly Ile Glu Arg Ser Thr Leu Glu Glu
 50 55 60
 Pro Asn Leu Gln Pro Leu Gln Arg Arg Arg Ser Val Pro Val Leu Arg
 65 70 75 80
 Leu Ala Arg Pro Thr Glu Pro Pro Ala Arg Ser Asp Ile Asn Gly Ala
 85 90 95

Ala Val Arg Pro Glu Gln Arg Pro Ala Ala Arg Gly Ser Pro Arg Glu
 100 105 110
 Met Ile Arg Asp Glu Gly Ser Ser Ala Arg Ser Arg Met Leu Arg Phe
 115 120 125
 Pro Ser Gly Ser Ser Ser Pro Asn Ile Leu Ala Ser Phe Ala Gly Lys
 130 135 140
 Asn Arg Val Trp Val Ile Ser Ala Pro His Ala Ser Glu Gly Tyr Tyr
 145 150 155 160
 Arg Leu Met Met Ser Leu Leu Lys Asp Asp Val Tyr Cys Glu Leu Ala
 165 170 175
 Glu Arg His Ile Gln Gln Ile Val Leu Phe His Gln Ala Gly Glu Glu
 180 185 190
 Gly Gly Lys Val Arg Arg Ile Thr Ser Glu Gly Gln Ile Leu Glu Gln
 195 200 205
 Pro Leu Asp Pro Ser Leu Ile Pro Lys Leu Met Ser Phe Leu Lys Leu
 210 215 220
 Glu Lys Gly Lys Phe Gly Met Val Leu Leu Lys Lys Thr Leu Gln Val
 225 230 235 240
 Glu Glu Arg Tyr Pro Tyr Pro Val Arg Leu Glu Ala Met Tyr Glu Val
 245 250 255
 Ile Asp Gln Gly Pro Ile Arg Arg Ile Glu Lys Ile Arg Gln Lys Gly
 260 265 270
 Phe Val Gln Lys Cys Lys Ala Ser Gly Val Glu Gly Gln Val Val Ala
 275 280 285
 Glu Gly Asn Asp Gly Gly Gly Gly Ala Gly Arg Pro Ser Gln Gly Ser
 290 295 300
 Glu Lys Lys Lys Glu Asp Pro Arg Arg Ala Gln Val Pro Pro Thr Arg
 305 310 315 320
 Glu Ser Arg Val Lys Val Leu Arg Lys Leu Ala Ala Thr Ala Pro Ala
 325 330 335
 Phe Pro Gln Pro Pro Ser Thr Pro Arg Ala Thr Thr Leu Thr Pro Ala
 340 345 350
 Pro Ala Thr Thr Val Thr Arg Ser Thr Ser Arg Ala Gly Asn Arg Cys
 355 360 365
 Cys Lys Thr Tyr Asp His His Trp Leu Ser His His Ala Glu Ala Leu
 370 375 380
 Asp Pro Leu Thr Leu Pro Thr Gly Pro Leu Gln Pro Leu Arg Val Ile
 385 390 395 400
 Thr Ala Arg Arg Pro Ser Val Ser Arg Glu Ser Leu Pro Ser Ile Pro
 405 410 415
 Gly Arg Ile Ser Thr Gly Arg Gly His Arg Gln Pro Gly Gly Pro Ala

420 425 430
 Arg Pro Thr Ser Leu Glu Ser Phe Thr Asn Ala Pro Pro Thr Thr Ile
 435 440 445
 Ser Glu Pro Ser Thr Arg Ala Ala Gly Pro Gly Arg Phe Arg Asp Asn
 450 455 460
 Arg Met Asp Arg Arg Glu His Gly His Arg Asp Pro Asn Val Val Pro
 465 470 475 480
 Gly Pro Pro Lys Pro Ala Lys Glu Lys Pro Pro Lys Lys Lys Ala Gln
 485 490 495
 Asp Lys Ile Leu Ser Asn Glu Tyr Glu Glu Lys Tyr Asp Leu Ser Arg
 500 505 510
 Pro Thr Ala Ser Gln Leu Glu Asp Glu Leu Gln Val Gly Asn Val Pro
 515 520 525
 Leu Lys Lys Ala Lys Glu Ser Lys Lys His Glu Lys Leu Glu Lys Pro
 530 535 540
 Glu Lys Glu Lys Lys Lys Lys Lys Lys Lys
 545 550

<210> 576
 <211> 23
 <212> PRT
 <213> Homo sapiens

<400> 576
 Met Leu Ala Leu Leu Gly Leu Leu Ala Gly Thr Glu His Pro Pro Gly
 1 5 10 15
 Pro Gln Gly Pro Gly Pro Ser
 20

<210> 577
 <211> 25
 <212> PRT
 <213> Homo sapiens

<400> 577
 Met Val Asn Ile Phe Gly Phe Val Ser Cys Ile Val Phe Val Val Ala
 1 5 10 15
 Val Gln Leu Cys Tyr Met Lys Gln Pro
 20 25

<210> 578
 <211> 122
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (92)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (100)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (109)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (116)
 <223> Xaa equals any amino acid

<400> 578
 Met Leu Ala Leu Thr Leu Ala Lys Ala Asp Ser Pro Arg Thr Ala Leu
 1 5 10 15
 Leu Cys Ser Ala Trp Leu Leu Thr Ala Ser Phe Ser Ala Gln Gln His
 20 25 30
 Lys Gly Ser Leu Gln Val His Gln Thr Leu Ser Val Glu Met Asp Gln
 35 40 45
 Val Leu Lys Ala Leu Ser Phe Pro Lys Lys Lys Ala Ala Leu Leu Ser
 50 55 60
 Thr Ala Ile Leu Cys Phe Leu Arg Thr Ala Leu Arg Gln Ser Phe Ser
 65 70 75 80
 Ser Ala Trp Asn Pro Gly Ala Leu Lys Gly Pro Xaa Thr Ala Ala Thr
 85 90 95
 Lys Asp Thr Xaa Leu Thr Ser Leu Arg Met Ser Lys Xaa Gly Pro Gly
 100 105 110
 His Trp Ala Xaa Lys Thr Ser Trp Cys Lys
 115 120

<210> 579
 <211> 216
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (6)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (18)
 <223> Xaa equals any amino acid

<400> 579

Cys Phe Pro Trp Gly Xaa Ala Leu Arg Gln Lys Leu Phe Pro Ser Ala
 1 5 10 15
 Leu Xaa Ala Leu Val Pro Ser Gly Ala Gln Pro Leu Pro Ala Thr Lys
 20 25 30
 Asp Thr Val Leu Ala Pro Leu Arg Met Ser Gln Val Arg Ser Leu Val
 35 40 45
 Ile Gly Leu Gln Asn Leu Leu Val Gln Lys Asp Pro Leu Leu Ser Gln
 50 55 60
 Ala Cys Val Gly Cys Leu Glu Ala Leu Leu Asp Tyr Leu Asp Ala Arg
 65 70 75 80
 Ser Pro Asp Ile Ala Leu His Val Ala Ser Gln Pro Trp Asn Arg Phe
 85 90 95
 Leu Leu Phe Thr Leu Leu Asp Ala Gly Glu Asn Ser Phe Leu Arg Pro
 100 105 110
 Glu Ile Leu Arg Leu Met Thr Leu Phe Met Arg Tyr Arg Ser Ser Ser
 115 120 125
 Val Leu Ser His Glu Glu Val Gly Asp Val Leu Gln Gly Val Ala Leu
 130 135 140
 Ala Asp Leu Ser Thr Leu Ser Asn Thr Thr Leu Gln Ala Leu His Gly
 145 150 155 160
 Phe Phe Gln Gln Leu Gln Ser Met Gly His Leu Ala Asp His Ser Met
 165 170 175
 Ala Gln Thr Leu Gln Ala Ser Leu Glu Gly Leu Pro Pro Ser Thr Ser
 180 185 190
 Ser Gly Gln Pro Pro Leu Gln Asp Met Leu Cys Leu Gly Gly Val Ala
 195 200 205
 Val Ser Leu Ser His Ile Arg Asn
 210 215

<210> 580

<211> 127

<212> PRT

<213> Homo sapiens

<400> 580

Met Leu Pro Leu Leu Ile Ile Cys Leu Leu Pro Ala Ile Glu Gly Lys
 1 5 10 15
 Asn Cys Leu Arg Cys Trp Pro Glu Leu Ser Ala Leu Ile Asp Tyr Asp
 20 25 30
 Leu Gln Ile Leu Trp Val Thr Pro Gly Pro Pro Thr Glu Leu Ser Gln
 35 40 45

Ser Ile His Ser Leu Phe Leu Glu Asp Asn Asn Phe Leu Lys Pro Trp
 50 55 60
 Tyr Leu Asp Arg Asp His Leu Glu Glu Glu Thr Ala Lys Phe Phe Thr
 65 70 75 80
 Gln Val His Gln Ala Ile Lys Thr Leu Arg Asp Asp Lys Thr Val Leu
 85 90 95
 Leu Glu Glu Ile Tyr Thr His Lys Asn Leu Phe Thr Glu Arg Leu Asn
 100 105 110
 Lys Ile Ser Asp Gly Leu Lys Glu Lys Glu Pro His Pro Ser Pro
 115 120 125

<210> 581

<211> 164

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (126)

<223> Xaa equals any amino acid

<400> 581

Met Leu Pro Leu Leu Ile Ile Cys Leu Leu Pro Ala Ile Glu Gly Lys
 1 5 10 15
 Asn Cys Leu Arg Cys Trp Pro Glu Leu Ser Ala Leu Ile Asp Tyr Asp
 20 25 30
 Leu Gln Ile Leu Trp Val Thr Pro Gly Pro Pro Thr Glu Leu Ser Gln
 35 40 45
 Ser Ile His Ser Leu Phe Leu Glu Asp Asn Asn Phe Leu Lys Pro Trp
 50 55 60
 Tyr Leu Asp Arg Asp His Leu Glu Glu Glu Thr Ala Lys Phe Phe Thr
 65 70 75 80
 Gln Val His Gln Ala Ile Lys Thr Leu Arg Asp Asp Lys Thr Val Leu
 85 90 95
 Leu Glu Glu Ile Tyr Thr His Lys Asn Leu Phe Thr Glu Arg Leu Asn
 100 105 110
 Lys Ile Ser Asp Gly Leu Lys Glu Lys Gly Ala Pro Pro Xaa Ser Met
 115 120 125
 Asn Ala Phe Pro Ala Pro Ser Pro Thr Cys Thr Pro Glu Pro Leu Gly
 130 135 140
 Ser Val Cys Leu Pro Ser Thr Ser Val Ser Leu Pro Ser His Leu Pro
 145 150 155 160
 Gly Ser Leu Gln

<210> 582
 <211> 71
 <212> PRT
 <213> Homo sapiens

<400> 582
 Met Val Gln Gly Pro Leu Thr His Leu Met Leu Val Leu Leu Ile Ser
 1 5 10 15
 Leu Ile Phe Leu Ser Arg Gly Ser Gly Arg Ala Trp Ala Phe Ser His
 20 25 30
 Ser Cys Phe Lys Thr Ser Asp Leu Leu Pro Cys Arg Asn Arg Trp Glu
 35 40 45
 Val Ile Glu Phe Leu His Tyr Ser Asn Leu His Ser His Ile Ser Leu
 50 55 60
 Ser Val Thr Lys Thr Phe Leu
 65 70

<210> 583
 <211> 140
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (136)
 <223> Xaa equals any amino acid

<400> 583
 Met Ala Ser Leu Gly Leu Gln Leu Val Gly Tyr Ile Leu Gly Leu Leu
 1 5 10 15
 Gly Leu Leu Gly Thr Leu Val Ala Met Leu Leu Pro Ser Trp Lys Thr
 20 25 30
 Ser Ser Tyr Val Gly Ala Ser Ile Val Thr Ala Val Gly Phe Ser Lys
 35 40 45
 Gly Leu Trp Met Glu Cys Ala Thr His Ser Thr Gly Ile Thr Gln Cys
 50 55 60
 Asp Ile Tyr Ser Thr Leu Leu Gly Leu Pro Ala Asp Ile Gln Ala Ala
 65 70 75 80
 Gln Ala Met Met Val Thr Ser Ser Ala Ile Ser Ser Leu Ala Cys Ile
 85 90 95
 Ile Ser Val Val Gly Met Arg Cys Thr Val Phe Cys Gln Glu Ser Arg
 100 105 110
 Ala Lys Asp Arg Val Ala Val Ala Gly Gly Val Phe Phe Ile Leu Gly
 115 120 125
 Ser Leu Leu Gly Phe Ile Pro Xaa Ala Trp Asn Leu

130

135

140

<210> 584
 <211> 86
 <212> PRT
 <213> Homo sapiens

<220>
 <221> SITE
 <222> (33)
 <223> Xaa equals any amino acid

<220>
 <221> SITE
 <222> (43)
 <223> Xaa equals any amino acid

<400> 584
 Arg Arg Phe Tyr Ser Pro Leu Val Pro Asp Ser Met Lys Phe Glu Ile
 1 5 10 15
 Gly Glu Ala Leu Tyr Leu Gly Ile Ile Ser Ser Leu Phe Ser Leu Ile
 20 25 30
 Xaa Gly Ile Ile Leu Cys Phe Ser Cys Ser Xaa Gln Arg Asn Arg Ser
 35 40 45
 Asn Tyr Tyr Asp Ala Tyr Gln Ala Gln Pro Leu Ala Thr Arg Ser Ser
 50 55 60
 Pro Arg Pro Gly Gln Pro Pro Lys Val Lys Ser Glu Phe Asn Ser Tyr
 65 70 75 80
 Ser Leu Thr Gly Tyr Val
 85

<210> 585
 <211> 42
 <212> PRT
 <213> Homo sapiens

<400> 585
 Met Phe Leu Phe Ile Thr Phe Thr Ile Leu Ala Ile Phe Ile Ile Glu
 1 5 10 15
 Pro Arg Asn Leu Arg Val Asp Leu Asn Leu Ile Lys Phe Gln Thr Ser
 20 25 30
 Trp Pro Lys Thr Leu Val Glu Glu Gln Asn
 35 40

<210> 586
 <211> 76
 <212> PRT
 <213> Homo sapiens

<400> 586

Ile Asn Phe Thr Tyr Lys Arg Leu Ser Leu Asp Phe Ile Tyr Ile Tyr
 1 5 10 15

Met Cys Val Cys Val Cys Val Cys Val Cys Val Cys Val Cys Val Tyr
 20 25 30

Leu Lys Arg Thr Cys Ala Ser Ile Lys Gly Asn Lys Met Arg Glu Tyr
 35 40 45

Ile Ile Asp Phe Val Lys Ser Lys Tyr Leu Asn Tyr Gly Phe Ser Ile
 50 55 60

Phe Lys Asn Ser Cys Ser Phe Cys Thr Tyr Phe Phe
 65 70 75

<210> 587

<211> 53

<212> PRT

<213> Homo sapiens

<400> 587

Met Val Thr Phe Ile Asn Ala Thr Leu Trp Ile Ala Val Phe Ser Tyr
 1 5 10 15

Ile Met Val Trp Leu Val Thr Ile Ile Gly Tyr Thr Leu Gly Ile Pro
 20 25 30

Asp Val Ile Met Gly Ile Thr Phe Leu Ala Ala Gly Gln Val Phe Gln
 35 40 45

Thr Ala Trp Pro Ala
 50

<210> 588

<211> 169

<212> PRT

<213> Homo sapiens

<220>

<221> SITE

<222> (6)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (39)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (44)

<223> Xaa equals any amino acid

<220>

<221> SITE

<222> (71)

<223> Xaa equals any amino acid

<400> 588

```

Met Val Thr Phe Ile Xaa Ala Thr Leu Trp Ile Ala Val Phe Ser Tyr
 1             5             10             15

Ile Met Val Trp Leu Val Thr Ile Ile Gly Tyr Thr Leu Gly Ile Pro
      20             25             30

Asp Val Ile Met Gly Ile Xaa Phe Leu Ala Ala Xaa Thr Ser Val Pro
      35             40             45

Asp Cys Met Ala Ser Leu Ile Val Ala Arg Gln Gly Leu Gly Asp Met
      50             55             60

Ala Val Ser Asn Thr Ile Xaa Ser Asn Val Phe Asp Ile Leu Val Gly
      65             70             75             80

Leu Gly Val Pro Trp Gly Leu Gln Thr Met Val Val Asn Tyr Gly Ser
      85             90             95

Thr Val Lys Ile Asn Ser Arg Gly Leu Val Tyr Ser Val Val Leu Leu
      100            105            110

Leu Gly Ser Val Ala Leu Thr Val Leu Gly Ile His Leu Asn Lys Trp
      115            120            125

Arg Leu Asp Arg Lys Leu Gly Val Tyr Val Leu Val Leu Tyr Ala Ile
      130            135            140

Phe Leu Cys Phe Ser Ile Met Ile Glu Phe Asn Val Phe Thr Phe Val
      145            150            155            160

Asn Leu Pro Met Cys Arg Glu Asp Asp
      165

```

<210> 589

<211> 15090

<212> DNA

<213> Homo sapiens

<400> 589

```

acgtttcccta cttcctgtgc tcttgccgag acgcgcgcgt cgggggtttaa cgcgtttctg      60
ggccgcccgtta agcccgccct aggggcagct ttgactcgag agccggctat aggcgcgatgg      120
aaggttccctt ggaacgggag ggcgcagcgg gggcgctggc cgccgtgcta aagcacagct      180
cgacgttgcc gcccgaaagc acccaggctc ggggctacga cttcaaccgc ggtgtgaatt      240
accgcgcact gctggaggcc ttcggcacca ccggcttcca agcaaccaac ttcgggcgcg      300
ctgtacagca agtcaatgcc atggtgagga ccgggcggaa tttctaggga cgcggagggg      360
cgtggcttgtt agaaccaacg cgggtactaga cggggcgagc gtttccagtg gaggggatat      420
gtcttttatt tgagttgccc aatagttgga ggaaggcggg acctattctg ggcgggagtt      480
tctgtcctgg gaaggggatt ttgactctg gtggttacat gctggtacgg taacctgagg      540
aggcgaggac tgattcttgg tgtggggcg ggttctaggt acatttaaag ctttctggaa      600
tgggcggagc ctggggcaag acaaattaag ggaggatatg ggaggaggag cctaagtcgt      660
ggcggttctt gaatttagat ttgcttttcc cagcggggaa gggaccggat ctgaaaggag      720
atgctctctg attcctaaaa ggggtggggc ttgctgggca cgggtggcgca tgcctataat      780
cccagcattt tgggaagccg aggcgggtgg atcaagagaa gagggagttcg agacaagcct      840
ggccaacatg gtgaaaccct gtctctacta aaatgcaaaa aattagccgg gcatgggtgt      900
gcgcgcctgt agtcccagct actcgggagg ctgaggcagg agaatcgctt gaaccgcgca      960

```

ggtggagggt	gcagtgaagct	gagattgcgc	caactgcactc	cagcctgggtg	acagagcgat	1020
actctgtctc	aaaaaaaaaa	aaaaaaaaag	gccgggcacg	gtggctcatg	cctgtaatct	1080
cagcattttg	ggaggccgag	gcgggcggat	cacctgaggt	cgggagttcg	agaccagcct	1140
gaccaacatg	gagaaacccc	gtctctacta	aaatgcaaaa	aattagccgg	gcatgggtgg	1200
gcgcgcctgt	agtcccagct	actcgggagg	ctgaggcagg	agaatcgctt	gaacccggga	1260
ggtggagcct	gcagtgaagc	gagatcgcg	cattgcactc	tagcctgggt	aacaagagtg	1320
aaactccgtc	caaaaaaaaa	aaaaaaaaagg	tgggggcaaa	tcctgaacgt	gtgtcttgag	1380
atctgggtctg	ggaaggggca	gagtttacac	aggagatgtt	ccttggtccc	ctgtagaact	1440
ggtcctgtat	ccctgaatgt	gcagggcctg	gggtgaaatc	tgtttctgga	gcccacctgg	1500
agtccctgagt	ctgggattta	aggccagtg	ttaacttgac	ttggccctta	ctcacagatc	1560
gagaagaagc	tggaaccact	gtcacaggat	gaagaccagc	acgcggacct	gaccagagac	1620
gcgcgcccac	ttaccagctg	caccattttc	ctgggatata	catccaacct	catcagttca	1680
ggcatccgtg	ggagctggac	ctaccttggt	caggcaaca	tgggtggggac	ctggtgaggc	1740
cgtggccctg	gcctctgggt	caatgggcaa	tgcagttatt	gatcggttaa	gtgagatggg	1800
cagatagggg	tctgttataa	gcagaggaat	agaatcaagt	tttgttttgt	agcagagctc	1860
cctcataaga	gtcactggac	aaggatgagg	ttagaagtgc	tgcccagaat	gagggcaggg	1920
gcttccttct	tgggcccatt	tactgcctt	gtggctgcag	gtggacctat	tggtgaccac	1980
agctggcggc	gtggaggaag	acctcatcaa	gtgcctggcg	cccacatact	tgggagagtt	2040
tagcctcagc	gggaaggagc	tccgggagaa	cgggatcaat	aggtgagaa	cctgagtggg	2100
gttgggcagg	ggagctggac	caagggtcct	ggggcctgat	gcctacatgc	ctcctgttct	2160
caggatcgga	aacctgctgg	tgcccaatga	gaattactgc	aagtgttgag	actggctgat	2220
gcccattctg	gaccagatgg	tgatggagca	gaacacagag	gtggggctgg	ggcaacctgg	2280
aggggccagt	tcagtgggag	tcaggggagg	catggcctga	aggtcacatc	ctctcctagg	2340
gtgtaaagtg	gacgccttct	aagatgatcg	ccgggctggg	caaggagatc	aacaaccag	2400
agtccgtgta	ttactggggc	cagaagggtga	ggacctaaag	gggagcaaa	tagccagact	2460
ttggcatgtg	ttactttatt	tcacttttcc	agcctcctgg	ggattcagta	ctgttattct	2520
cagcatcctc	actcttagat	gaggagactc	aaacacagat	aggcgtggta	attttttttt	2580
tttttgagac	aggatcttgc	tctgtcacct	aggctggagt	gcagtgggtg	gatcacagct	2640
cattgcagcc	tcaacctcct	ggggccaagc	agtcctccca	cctcagcctc	tcgagtagct	2700
gggaccacag	gcacatgcc	tcactgccag	ctaattttta	aaattttttg	tagagatggg	2760
ggtctccctg	tgtttcccg	gctgggtctg	aactcctggc	gtcaggcagt	cctcccacct	2820
tgccctccca	aagtgtctgg	attacaggcg	tgagccactg	tgcccagcca	ggctaggtaa	2880
ttttgtctga	agtcacacag	ataactagt	gggcctcagc	atccttatgc	tcctccaga	2940
ctatctctgg	aacagtagag	gcaacactta	gcaactctcc	tggggcctgg	ctcagggtcc	3000
cacactccca	gatgctataa	aataagagct	accactccc	tttaattaga	gaatcagaac	3060
ctgaaaaaaa	aaaaaaaaaa	gctacatagt	cttttttttt	tttttttttt	ttttgagaca	3120
gagtccttgc	ctgtcgccca	ggctggagtg	taatgggtgt	atttcagctc	actgcacct	3180
ccacctccca	ggttcaagt	attctcccgc	ctcaccctcc	tgagttagctg	ggactatagg	3240
caccacccat	catgcccggc	caatttttgt	atttttctac	agatgggggt	tcaccatgtt	3300
ggccagctg	gtcttgaa	cctgacctca	agtgatccac	ccgccttggc	ctcccaagt	3360
gctgggatta	caggggtgag	ccaccacacc	cagcctactt	actctttctt	ttttacgaga	3420
cagggctca	ttctgtttcc	caggctggag	tgcaatggca	caataatggc	tcactgctgt	3480
cttgagcttc	tgggctcagt	cgattctcct	gcctcagcct	gctgagtagc	tgggactaca	3540
ggtgcgtgcc	accatgcctg	gctaattgtt	ttttagagag	tgggaactca	ccatgttgca	3600
caagtgggt	cttttttttt	ttttgagacg	gagtttttgt	cttgtttacc	aggccagagt	3660
ccaatggcgc	aatcttggct	cacagcaacc	tctacctcct	gggttcaagc	aattctcctg	3720
cctcagcacc	aagttcccaa	gtagctggga	ttataggcat	gtgccaccac	ccctggctaa	3780
ttttgtattt	ttagtagagg	cagggtttct	ccatgttggg	caggctgggtg	tcgagctcct	3840
gacctcaggt	gatccaccgc	cctcggcctc	ccaaagtgt	gggattacaa	gcgtgagcca	3900
ccgcgcccgc	ccacaagctg	gctcttttaa	aaagaattag	acggccgggc	acgggtggctc	3960
atgcttgtaa	tcccagtagt	ttgggggctg	aggcgggtgg	atcacctgaa	gtcaggagtt	4020
caagaccagc	ctggccaaca	tggtggaacc	ctgtctctac	taaaaaaca	aaatgcaaaa	4080
ttagctgggc	atagtgccat	gcgcctgtaa	tcctagctac	tcgggagggt	gaagcaggag	4140
aatcactgga	accaggagg	cagaggttgc	agttagctga	gatagtggca	ttgcaactca	4200
gcctgggcaa	cgagtgaac	tccgtctcag	ggaataaaaa	aaaagagaga	gaaacagctc	4260
agcaagctaa	gaataggctg	gttctttatg	tggcaggcac	tatactaagt	gttttctgtg	4320
ggttttctca	tataggcctc	atctgtgaga	ggtgtttctg	ttatgcttat	aattgaggaa	4380
acagctctag	agaaattagg	caccccatcc	acagtcagat	agtcataatg	ccagcatgga	4440
gacgaggctc	tgagctccag	ccactgtcct	gtcatgttct	ctgcagaacc	acatccctgt	4500
gtttagtccc	gcacttacag	acggctcgct	gggcgacatg	atcttcttcc	attcctacaa	4560
gaacccgggc	ctggtcctgg	acatcggtga	gggtgaggcg	ctagggccac	agaggagagg	4620

ggaaggaggg	ctggctgagt	ccaaggcctg	acttcggcgc	tcttccccca	gacctgaggc	4680
tcatcaacac	acaggccatc	tttgccaagt	gcactgggat	gatcattctg	ggcgggggcg	4740
tggtaagca	ccacattgcc	aatgccaaac	tcatggtgag	tgggggtggc	gcttcggccc	4800
actctgcaga	catgctgtgt	ggtgggccta	tgccatgtgc	tgggtagaca	gcatgaacta	4860
gacaggccag	gatccctgct	ccccgggact	gatgttctag	taggggagat	agcaaacaag	4920
tgacatccac	gtcagggggc	agtcattgct	acggggaata	ctaaatgatg	gcatgagaag	4980
agaaaggggt	gctgtccaac	aagaggtttt	ggaaggaggc	ttctggaagt	gtgagctggg	5040
agcaggggtt	tggggaggca	tctcccagga	gctatgtggt	tgtctcccgt	gccaggagtt	5100
tgtgctgctg	tactagcatt	gagcttctgg	attgcaaagt	tcccaggaga	gggaacagcc	5160
attgcaaagg	ctctggggcg	cctgaagtaa	tccaggaaca	gctgggtacc	tggtgagggg	5220
aagggtggagt	ggtgagggcc	aggagggtgat	gcaggaggt	gccacaggga	gcctgctggg	5280
ccctgtgggc	tgaggcggg	ctttggcctt	tgcaactaga	gaagtgggag	aggacttgac	5340
tcgggttccc	atgctcccc	tgggtggccat	gtggtgaaca	gatggtggca	gggtgagtga	5400
aactccagtc	caggacagt	gtgaccatgc	agggatcagg	aggcaggcgg	tggttggatt	5460
tggagggcct	ctgaagatag	agttgctggc	agctcctgcc	ttgcagatgg	ggcagggttg	5520
ttgacacctg	gctgttggtt	ctggggaaac	acagccatcg	ttgccagca	gctctagtga	5580
ccccagacat	tgacatgggc	cctgtctggg	agcgaatgtc	tgtgaagggc	ttccttcac	5640
tgggacacac	ctctcagcct	gtttggctac	ggtgtcctcc	ctctgtgtct	gtctcctgtg	5700
actggctgac	tgggcccacc	gtgccccgc	ctccccacag	cggaaacggg	ccgactacgc	5760
tgtttacatc	aacacagccc	aggagtttga	tggctctgac	tcagggtgcc	gaccagacga	5820
ggctgtctcc	tggggcaaga	tccgggtgga	tgcacagccc	gtcaaggtaa	gcgctggctg	5880
ggtggggcat	aggggtctctg	ggacgatgag	tgtgggtccc	atggcttacc	caggttcccc	5940
cctaccacagg	tctatgctga	cgccctccctg	gtcttcccc	tgcttgtggc	tgaaaccttt	6000
gcccagaaga	tggatgcctt	catgcatgag	aagaacgagg	actgagcggc	tgcggtccca	6060
ggaaggctct	acccccctctt	ctatttatta	atttgcagac	ccagcccctc	ccctactttt	6120
tggtcagcta	cgtctctaga	ataagatggt	atctgaagtc	cttccatgtc	tgtgtctcgg	6180
tccttgggtc	tgttgggtgg	tccccggct	tcagcctgct	ccatcctctg	cctcataggc	6240
ctcctctcgc	cagcactgga	cgctgcctcc	catggcggtc	agcaggcagg	gctctgttgg	6300
gtggtaggcc	agcgactgca	ccacaccgga	acccacaggc	agggccagag	ccagcgcacc	6360
ctgtggagcg	aggggttaggg	agtgggttatc	tgtggctggg	ctgtaccctg	gtttctgagg	6420
tccctgggca	ccccccatct	cagtcctgcc	tgaagccctc	agtcacctct	ccccgacctt	6480
cagccacctg	cctctaattg	cctcctagac	actgcaaaat	taatctacct	cagactgagc	6540
ccctcagtag	ctctgtccta	ccagggtgttc	aggccgcaag	tcttgggagc	ctcttattga	6600
ttttttatct	tttaaaatag	cagagatggg	gtcttaccat	gttgcccagg	ctgggtctcga	6660
actcctggcc	tcaagtgatc	ctcctgcctt	ggcctcccaa	agtgttagga	ctacagggtg	6720
gagccaccat	gcctggcttt	gggagttctt	ttctttttct	gttttttttt	gagatggaag	6780
cttgcctctg	cgccaggctg	gagtgcagt	gcgccatctg	ggctcactgc	aacctccgac	6840
tccttagttc	aagcgattct	cctgcctcag	cctcccagat	aggtgggatt	acaggcacgc	6900
gctaccatgc	ccagctaatt	tttgtatttt	tagtacagat	ggggtttcac	catgttgccc	6960
aggatgatct	ctatctcctg	acctcgtgat	ccacccccct	cgccctccca	aagtgtctgg	7020
attacagggt	tgaaccacca	tgcctggccg	ggagtctttt	tcttgtacca	catgttcctc	7080
tatcagttat	tctctctggc	tctgcttcta	gaccatgtcc	agagactgct	gattttctgc	7140
cactaccatg	tttgaggcat	gccttgcctc	cagcttgcc	gttccctgcc	accagctggg	7200
ctccatcctg	tccatttggc	agccccaatg	atccccactt	ccccgtgtcc	caacacaatg	7260
taaacagttc	ctcaagcaag	ccatgcttcc	tctttccacc	ttgaaaatgt	cccttgatgt	7320
gcctgccctc	caaggcaact	tctgttctac	tgggcccata	agaaataggt	ggaacattct	7380
tgtacacctt	gttcctaaag	caagagcttg	tccgccaaag	cttcaggggc	cccccggttc	7440
cctccatcct	cttatgggccc	ttagttcccc	tggccaagcc	cagcgctgat	gtctcctttg	7500
ccgagattcc	cccggtctctg	acccccactac	accaggatgg	tctgtttctg	gcctgactcc	7560
ccaccaggct	gggacatgtc	aaggacaggg	ctcagggtct	gaaaccatgc	acagggatgc	7620
taagatgtag	ctccagtttc	ttgaatgact	gcagccctat	ctcacccaag	gttagacatg	7680
gccgtcggct	cccccttgcc	caggggtcag	tggcagttgc	tcggcctggc	atctgcagcc	7740
cagcctgacc	ccggatcttg	ccgcacctgc	cgccaccctg	aagcctttgt	ttcctgactg	7800
atgcatgcgc	aggctacacc	tcttaacata	tgtgttccc	tttgcttggg	atgcccttcc	7860
tgcctcatct	tctctctagc	ccaagctggg	cacggtgtct	caggcctgta	atcccagcac	7920
tttgggaggg	cgaggcgggg	gaatcacttg	aggtcaggag	tttgagacca	gcctggccaa	7980
catggtgaaa	ccctgtctct	actaaaaata	caaaaattag	ccaggatagg	tggtaggggc	8040
ctgtaatccc	agctactcag	gaggctgaga	catgagaatc	acctgaacct	tgggggggag	8100
agggtgcagt	gagctgagat	ggcgccactg	catttgctctg	ggcaatagtc	tcaaaaaaag	8160
aaaaaagggc	cgggtgtggg	ggcttacgcc	tgtaatccta	gcacttggga	aggctgaggt	8220
gggtggatca	tgaggtcagg	agttaagac	cagcctgacc	aacatagtga	aacctgtct	8280

ctactaaaaa	tacaaaaatt	agctgggtgt	ggtggcacgc	acctataatc	ccaactactc	8340
aggagactga	ggcaggagaa	tcgcttgaac	ttgggaggcg	gagtttacag	tgagccaaga	8400
ttgcgccact	gcactctagc	ctgggcgaca	gagcaagact	tgtctcaaaa	aaaaaaaaaa	8460
aaaaaaaaaa	aagatccctag	ccttcaggcc	ctggagtga	tgaggtaagg	acagggtga	8520
gatggggcag	gcactctagg	atgaagtagg	gctgggggca	cctcacctcc	accaggtccc	8580
agaagaacac	cttcccgtcc	tcagaacagc	tgaccacatg	tgtgtcacgc	tcgctcaggc	8640
agcagtcacg	cttgtattcc	tggttcttat	ggcccttgta	cctaagggtg	gacaggatcg	8700
gggggcttgg	tcctctccag	gggtgggaga	ggaggggaagg	ggatccccac	gaccacaagg	8760
actcactcgc	ccagcagctc	ccctgtgtct	ttgtccagga	gccgcaatgt	ggagtccagg	8820
ctggacacca	gggtgcactg	cccattcccgg	ctgaagcagg	tgagggtgat	ggggccttgg	8880
gggaagggtg	gttaggttag	tgagggtggg	gtgcccctgg	ttggcccccc	atcttccctg	8940
cctgtcccac	atccccagcc	acactcactg	cccacgtagt	ctgagaagag	ctgccccatc	9000
cttaggtcat	agcgtctcac	gcggccatcc	acggagctgc	aggagagggt	agatccagcg	9060
ggaaccttga	ctacactcac	atggctccag	gcagccctgt	gccttcccag	cccagtgggc	9120
ctgctcttcc	agtgcacagg	agtggaaatc	tgaagctctg	gccttgagac	tcaggcccag	9180
ggccaattac	gtcctactcc	atcattttcca	agaccacac	cccccttcca	agcccttgga	9240
gtccttctga	ttcccccttt	tcttcccttt	gtttgagaca	gagttttgct	cttgttgcct	9300
aggctggagt	gcaatggcat	gatcttggct	caccggaaac	tctgcctccc	gggttcaaga	9360
gattctcctt	cctcagcctc	ccgagtagat	gggaatacac	gcattgcacca	ccacgccctg	9420
ctaattttgt	attttttagta	gagacggggg	ttctccatgt	tggtcaggct	ggtctcgaac	9480
tccaacctc	aggtgatccg	cccacctcag	cctcccaaag	tgctgggatt	acagggtgtga	9540
gccacccac	ctggcccaat	tccccctttt	cctgcattct	ccagctcctc	ctcctcagta	9600
ctcagtccca	ccactttccc	cactaccacg	caccagcate	tagactgttc	tggtctccct	9660
gcaccccca	cagccaccag	agggagcact	tttcaaagta	cagttgacct	atgaacaaca	9720
cggtttgaac	tgaacgcgtc	cacttatatg	tggattttct	tctgcctcta	tcagctgtga	9780
gacaccaaga	tcaatccctc	ctcttccctc	tcctctgctt	tctcaacacg	aagatcttta	9840
tgacgatctc	ttcacttcca	cttaatgaat	agaaaatata	ttttttccac	caggcgcggt	9900
ggctcacgcc	tgtgattcca	gctctttggg	aggccagggc	agggtggatca	cggaggtcaag	9960
agatggagac	cctcctggcc	aacatggcga	aaccccgctc	ctactaaaaa	tacaaaaatt	10020
agctgggctg	ggtggcacgc	gactgtagtc	ccagctacta	gggaggctga	ggcaggagaa	10080
tcgcttgaac	ctagaagtta	gaggttgacg	tgagccgaga	tcacgtcact	gcactccagc	10140
ctggcaacag	agcgagactg	cgtctcaaaa	aaaacaaaaa	ttcttccctta	tgattatttt	10200
tatgtattta	tttatttaat	ttatttactt	attttgagac	ggagtcttgc	tctatcgccc	10260
aggagtgtag	tgggtcgatg	tcggtccaca	gcaagctctg	cctcctgggt	tcactccatt	10320
ctcctgcctc	agcctcctga	gtagctggga	ctacaggcgc	ctgccactat	gcccgggctaa	10380
ttttttgtat	ttttagtaga	gacgggggtt	caccgtgtta	gccagaatga	tctcgatctc	10440
ctgacgctcat	gatcgcctg	cctctgcctc	ccaaagtgc	gggattacag	gcattgagcca	10500
cagcgcccg	cctattttta	tttattttta	gaaatcattt	tatctttttt	tttttgagat	10560
ggagtctcac	tttgtcgccc	aggctggagt	gcagtggcac	aatctcggct	cactgcaacc	10620
tccaactccc	gggttcaggc	gattctcctg	cctccgcctc	ccgagtggct	gggattacag	10680
gctcccgta	ccacacctgg	ctaatttttg	cattttttagt	agagacgggg	tttcaccatg	10740
ttggccaggc	tgatctcaac	ctcctgacct	caagtgatct	gcccaccttg	gcctcccaaa	10800
gtgctgggat	tacaggtgtg	agccaccgtg	ccgggccaga	ttattattat	tttgtagaca	10860
gtctgtcttt	caccagcat	ggagtgcatt	ggtgcctcga	actcttgagc	tcaagtgatc	10920
cttccacttc	agcctcccaa	gtagctggga	ttacagctgt	gtgccactgt	gcccagctga	10980
gagtagggtt	taatctgagc	atgggggcag	ctatgattcc	ccgtagcacc	tggggtgaga	11040
ccaggtcctg	gctccactca	ccctgccagg	atctcgtggt	ctgacacctt	cacactggac	11100
acgccatctc	tggcctcatc	cagcgtctgc	actggctcag	gcctccgtga	gcggcaatcc	11160
caacagcgga	tactggaatc	aatagagcct	gtgaggccag	catgatgggt	aggtcagggt	11220
tggaggggga	gggcagcacc	ctgggcccc	gtgcttaggc	cccagactca	ccggacagga	11280
taactgtggc	ctcttcatta	aactgcaccg	tgttcacctt	ctgagaaagt	tattgccact	11340
cagaggaggc	tggacttttg	aggactggga	taaaggcagg	gttcccagtg	tcggttaaag	11400
caaggcgaa	ggggagggtga	aaggtttttg	gggaacagca	aggacagggg	ttgggtgactg	11460
cctagcctgg	catgcggagt	gggggacgt	catctgggga	agggatcctt	acgggtgtaat	11520
gggggtggcc	gtgtcaccac	ctatgcgcta	atacgggtcc	cctccactca	aatgagggtc	11580
tccaggcttt	cactcaccct	tgcgtggccc	cggaaattgc	gcacgacctg	ccctgatgce	11640
acatccaca	gaaccaccgc	cttgtcccc	ccgcccggagc	agagactact	gttgtcaaa	11700
gagctggagt	aaaggaggag	gaggatcagc	atcgacctcg	gatcccagcc	tcagcgctcc	11760
catcccagcc	tgggtccccg	ctcaccgggc	cgcattccagc	acctcgtagc	cgtggccgct	11820
gtacgtccgc	agcagcgtcc	cccgaagcgg	gttccacagc	ttcagcgtct	tgtcactgcc	11880
gcacgtcagg	cagtaattgc	catccactgg	ggaacaccag	gcgggggtta	ctgggcccgc	11940

gatctcagga	ggcgggagga	ggacccggaa	tgaagacgaa	ggcgctcacc	attaaatcgt	12000
acggctcgca	ctgccccctg	cccgcagtcc	agcgtcttca	accgtttctg	cggcagctct	12060
ggaggccgcg	gctttggctc	agggaaagcc	atgctcccag	gactccttcc	ttgcagcctt	12120
aaatcgggtct	gtacggaaaa	ttccgcgcct	tagaaaacca	cgcttgggtg	taaccttatt	12180
attgttcttc	ctgacctact	tctgttttat	cacttcggg	ttcatcattt	tggcatttcg	12240
gtgatcgggt	tggaaactatt	gaagcccgct	ttcaggttct	tttccccatt	ttccctttga	12300
aaggaagact	tctggcttct	cctaaatctc	cgttctctgg	gtaaggggag	tccaagcctc	12360
tgatcatgagg	aacggaaatg	cgagggcctc	gggtgttact	ctaaaatccg	ccctcagctt	12420
gcacgcggga	agctgcgatt	cctgcagcgg	aagaggcgtg	atctggcctt	cgactcgcta	12480
tgatccactaa	caatatgtcg	gacccacgga	ggccgaacaa	agtgcctgag	tgaggacccc	12540
agcgtcgtgg	gcacgggttc	gggttgtggg	tgtggatcgg	ggccctggga	agcgccctgc	12600
tatcccgggg	gcaggacctg	agcgccctg	ctgtcgagc	ctgtcgagc	tacaagcccc	12660
cgccgagcga	atgtaacccg	gccttggacg	acccgacgcc	ggactacatg	aacctgctgg	12720
gcatgatctt	cagcatgtgc	ggcctcatgc	ttaaggtggg	cggtgtgag	cttctatggg	12780
tgtagttgga	cctgagaacg	aggcccgggg	gcgggtttgg	aatgaagcgg	ggtgtcttgt	12840
cattgctgat	ggggcgggac	ctgagatcgg	ccgggagtg	ggctgcgatg	acgctggggc	12900
gagaaagccc	cagtctttgg	tgaagtcaag	gattcagatc	aggttgggga	tgtggcagat	12960
tggtctgcga	gtggggccag	gctttgaagc	aacttggaga	ggagttgtgg	aaaaagggca	13020
gggtcttaag	catgtgggat	gtcagagtct	ctcttggctc	tgagagacgc	aggccagaca	13080
gtaggactag	aaaccacgta	tctagagtat	gccatgagca	ggtgggactg	aggaattccg	13140
ggtggggcaa	ggtcccagct	gcatcagatg	gaatcagtg	gcatgatctg	gtgtctggaa	13200
aggtggcttc	ggggactcat	tgttgtgcct	ttactaacc	tgccaccaca	cttaccttcc	13260
cctagctgaa	gtggtgtgct	tgggtcgctg	tctactgctc	cttcatcagc	tttgccaact	13320
ctcggagctc	ggaggacacg	aagcaaatga	tgagttagct	catgtgagac	ttgccctaca	13380
gaacaagtga	ctcttgagta	aggggtgggg	ggacccagc	ctggccatcc	tagactgaca	13440
ccctctccct	gtctcaggct	gtccatctct	gcggtgggta	tgtcctatct	gcagaatcct	13500
cagcccatga	cgcccccatg	gtgataccag	cctagaagg	tcacattttg	gacctgtct	13560
atccactagg	cctgggcttt	ggctgctaaa	cctgctgcct	tcagctgcca	tcctggactt	13620
ccctgaatga	ggcgtctctg	gtgccccag	ctggatagag	ggaacctggc	cctttcctag	13680
ggaacacctt	aggtttacct	ctcctgcctc	ccttccccctg	cctgctgctg	ggggagatgc	13740
tgtccatggt	tctaggggta	ttcatttgc	ttctcggtga	aaactgttgt	taataaagtt	13800
tttcaactctg	gctgtcagcc	tcttctgttc	agtgggggtg	tcctcctacc	tggcggggaa	13860
ggctctagcc	ccataggcct	ggtgtggggc	cccagctctg	aggcttcttg	ctgttcat	13920
gcttacttca	taaaccttgt	gtcttaagtc	aggtgctagg	gacaagacag	tgacttctgc	13980
cctctggcaa	ctaccagatg	ggccctgctg	acctagataa	tctaggcttt	ggtttccttt	14040
tttttttttc	ctttttaaga	aagaaaatgg	tcttgatctg	tcatgcaggc	tgagtgcagt	14100
ggcacaatct	atgttcaactg	cagcctcaaa	ctcctgggct	caagcaatcc	tcccacctca	14160
gcctgccacg	taactgggac	cacaaatgcg	tgtaccatg	cccagttaat	tcttgttttt	14220
tttgagacag	agttttgc	ttgttgccca	ggctggagg	caatggcatg	atcttgatct	14280
cggtcactg	caacctccgc	ctcccagggt	caagtgatc	tcctgcctca	gtctcccaag	14340
tagctgggat	tacaggcatg	tgccaccatg	cccagcta	ttttgtattt	ttacattttg	14400
tgtaaaatta	caaattttgt	gttttcaaac	ccgtctctac	aaaacaaccc	atgttgcca	14460
ggctgggtctc	aaactcccag	gccaagtga	ttcaccagcc	tggccctccc	aaagtgtctg	14520
gattgcaggc	ttgagccact	gcgcctgccc	tgggctttgt	tttcttatca	gagaatgaac	14580
tggtaggaat	tgggaaaggc	atgaaagact	cggggtcctt	ccccacttgt	cagacctct	14640
tttctctccg	gaacacccag	ggatccttct	caaccaggct	ggatcccatc	cctgggtactc	14700
caggggtatt	tacccaacgt	cccaatcccc	acagtatagg	actcttcatc	agatcctcct	14760
cttaggcaag	ctaggtcctt	ccaggacctt	agcgctgaag	gtccatggga	cggacacctt	14820
ggattcccat	ggacacacta	caccggctag	gaaaacccgg	cccccttagg	aaaagcactt	14880
ctgctcctac	cggcataaag	aggcattccg	tcttgggaatt	ccggcattaa	gaggcattcc	14940
gtcttcatag	cccgtgagac	gccagtgtca	cctttagccc	aaccagtgcc	ctgagggtgg	15000
cattttcccta	cttccctgta	acgacccccg	ggattgccc	gggtacagc	ctctctcccg	15060
tgagcctcca	gaccgcgccc	tggccccgcc				15090

<210> 590

<211> 15090

<212> DNA

<213> Homo sapiens

<400> 590

acgttcccta cttcctgtgc tcttgccggag acgcgcgcgt cgggggtttaa cgcgtttctg 60

ggccgcccgt	agcccgccct	aggggcagct	ttgactcgag	agccggctat	aggcgcagtg	120
aaggttccct	ggaacgggag	gcgccagcgg	ggcgctggc	cgccgtgcta	aagcacagct	180
cgacgttgcc	gcccgaagc	accaggtcc	gggctacga	cttcaaccgc	ggtgtgaatt	240
accgcgact	gctggaggcc	ttcggcacca	ccggttcca	agcaaccaac	ttcgggcgcg	300
ctgtacagca	agtcaatgcc	atggtgagga	ccgggcggaa	tttctaggga	cgccggagggg	360
cgtggcttgt	agaaccaacg	cgttactaga	cgggggcagc	gtttccagtg	gaggggatat	420
gtcttttatt	tgagttgccc	aatagttgga	ggaaggcggg	acctattctg	ggcgggagtt	480
tctgtcctgg	gaaggggatt	ttgcactctg	gtagttacat	gctggtacgg	taacctgagg	540
aggcgaggac	tgattcttgg	tgtggggggc	ggttctaggt	acatttaaag	ctttctggaa	600
tgggcgggagc	ctggggcaag	acaaattaag	ggaggatatg	ggaggaggag	cctaagtctg	660
ggcggttctt	gaatttagat	ttgcttttcc	cagcggggaa	gggaccggat	ctgaaaggag	720
atgctctctg	attcctaata	gggtgggggc	tggctgggca	cggtggcgca	tgcctataat	780
cccagcatatt	tgggaagccg	aggcgggtgg	atcaagagaa	gaggagttcg	agacaagcct	840
ggccaacatg	gtgaaaccct	gtctctacta	aaatgcaaaa	aattagccgg	gcatggtgtt	900
gcgcgcctgt	agtcccagct	actcgggagg	ctgaggcagg	agaatcgctt	gaaccgcgca	960
ggtggagggt	gcagttagct	gagattgcgc	cactgcactc	cagcctgggtg	acagagcgat	1020
actctgtctc	aaaaaaaaaa	aaaaaaaaag	gccgggcacg	gtggctcatg	cctgtaatct	1080
cagcattttg	ggaggccgag	gcgggcggat	cacctgaggt	cgagggttcg	agaccagcct	1140
gaccaacatg	gagaaacccc	gtctctacta	aaatgcaaaa	aattagccgg	gcatggtggt	1200
gcgcgcctgt	agtcccagct	actcgggagg	ctgaggcagg	agaatcgctt	gaaccgggga	1260
ggtggagctt	gcagttagcc	gagatcgcgc	cattgcactc	tagcctgggt	aacaagagtg	1320
aaactccgtc	caaaaaaaaa	aaaaaaagg	tgggggcaaa	tcctgaacgt	gtgtcttgag	1380
atctggtctg	ggaaggggca	gagtttacac	aggagatggt	ccttgggtccc	ctgtagaact	1440
ggtcctgtat	cctggaatgt	gcagggcctg	gggtgaaatc	tgtttctgga	gccacacttg	1500
agtcctgagt	ctgggattta	aggccagtgc	ttaacttgac	ttggccctta	ctcacagatc	1560
gagaagaagc	tgggaaccact	gtcacaggat	gaagaccagc	acgcggacct	gacccagagc	1620
cgccgcccac	ttaccagctg	caccattttc	ctgggatata	catccaacct	catcagttca	1680
ggcatccgtg	agaccattcg	ctaccttggt	cagcacaaca	tgggtgggac	ctggtgaggc	1740
cgtggccttg	gcctctgggt	caatgggcaa	tgcagttatt	gatcgtttaa	gtgagatggg	1800
cagatagggg	tctgttataa	gcagaggaat	agaatcaagt	tttgttttgt	agcagagctc	1860
cctcataaga	gtcactggac	aaggatgagg	ttagaagttc	tggccagaat	gagggcaggg	1920
gcttccttct	tggggcaaat	tcactgcctt	gtggctgcag	gtggacgtat	tgttgaccac	1980
agctggcggc	gtggaggaag	acctcatcaa	gtgcctggcg	cccacatact	tgggcgagtt	2040
tagcctcagg	gggaaggagc	tccgggagaa	cgggatcaat	aggtgagAAC	cctgagtggt	2100
gttgggcagg	ggagctggac	caagggtcct	ggggcctgat	gcctacatgc	ctcctgttct	2160
caggatcgga	aacctgctgg	tgcccaatga	gaattactgc	aagtttgagg	actggctgat	2220
gcccattctg	gaccagatgg	tgatggagca	gaacacagag	gtggggctgg	ggcaacctgg	2280
agggggcagtg	tcagtgagg	tcaggggagg	cattggcctga	aggtcacatc	ctctcctagg	2340
gtgtaaagtg	gcagcccttct	aagatgatcg	ccggctggg	caaggagatc	aacaaccag	2400
agtcctgtga	ttactgggccc	cagaagggtga	ggacctaaagc	gggagcaaa	tagccagact	2460
ttggcatgtg	ttaacttatt	tcacttttcc	agcctcctgg	ggattcagta	ctgttattct	2520
cagcatcctc	actcttagat	gaggagactc	aaacacagat	aggcgtggta	attttttttt	2580
tttttgagac	aggatcttgc	tctgtcacct	aggctggagt	gcagtgggtg	gatcacagct	2640
cattgcagcc	tcaacctcct	ggggccaagc	agtcctccca	cctcagcctc	tcgagtagct	2700
gggaccacag	gcacatgcca	tcatgcccag	ctaattttaa	aaattttttg	tagagatggg	2760
ggtctccctg	tgtttccag	gctggtcttg	aactcctggc	gtcaggcagt	cctccacct	2820
tggcctccca	aagtgtctgg	attacaggcg	tgagccactg	tggccagcca	ggctaggtaa	2880
ttttgtctga	agtcacacag	ataactagt	gggcctcagc	atccttatgc	tcctcccaga	2940
ctatctctgg	aacagtagag	gcaacactta	gcaactctcc	tggggcctgg	ctcagggtcc	3000
cacactccca	gatgctataa	aataagagct	accactccc	tttaattaga	gaatcagaac	3060
ctgaaaaaaaa	aaaaaaaaaa	gctacatagt	cttttttttt	tttttttttt	ttttgagaca	3120
gagtcttgct	ctgtgcgcca	ggctggagtg	taatgggtgtg	atttcagctc	actgcacct	3180
ccacctccca	ggttcaagtg	attctccgc	ctcaccctcc	tgagtagctg	ggactatagg	3240
caccacccat	catgcccggc	caatttttgt	atttttctac	agatgggggt	tcaccatgtt	3300
ggccaggctg	gtcttgaact	cctgacctca	agtgtaccac	ccgccttggc	ctcccaaagt	3360
gctgggatta	caggggtgag	ccaccacacc	cagcctactt	actctttctt	ttttacgaga	3420
cagggtctca	ttctgtttcc	caggctggag	tgcaatggca	caataatggc	tcactgctgt	3480
cttgagcttc	tgggctcagt	cgattctcct	gcctcagcct	gctgagtagc	tgggactaca	3540
ggtgcgtgcc	accatgcctg	gctaattgtt	ttttagagaa	tgggaactca	ccatgttgca	3600
caagctggct	cttttttttt	ttttgagacg	gagttttgtt	cttgttacc	aggccagagt	3660
ccaatggcgc	aatcttggtc	cacagcaacc	tctacctcct	gggttcaagc	aattctcctg	3720

cctcagcatc	aagttcccaa	gtagctggga	ttatagggcat	gtgccaccac	ccctgggtaa	3780
ttttgtattt	ttagtagagg	cagggtttct	ccatgttgg	caggctggg	tcgagctcct	3840
gacctcaggt	gatccaccg	cctcggcctc	ccaaagtgt	gggattacaa	gcgtgagcca	3900
ccgcgcccgg	ccacaagctg	gctctttaa	aaagaattag	acggccgggc	atggtggctc	3960
atgcttgtaa	tcccagtact	ttgggggctg	aggcgggtgg	atcacctgaa	gtcaggagtt	4020
caagaccagc	ctggccaaca	tggtggaacc	ctgtctctac	taaaaaaca	aaatgcaaaa	4080
ttagctgggc	atagtggcat	gcgcctgtaa	tcctagctac	tcgggaggct	gaagcaggag	4140
aatcactgga	accaggagg	cagaggttgc	agttagctga	gatagtcca	ttgactcca	4200
gcctgggcaa	cgagtgaac	tccgtctcag	ggaataaaaa	aaaagagaga	gaaacagctc	4260
agcaagctaa	gaataggctg	gttctttatg	tgccaggcac	tatactaagt	gttttctgtg	4320
ggttttctca	tataggcctc	atctgtgaga	ggtgtttctg	ttatgcttat	aattgaggaa	4380
acagtccctag	agaaattagg	caccccatcc	acagtcagat	agtcatatag	ccagcatgga	4440
gacaggcctc	ctagctccag	ccactgtctc	ctgcatgtct	ctgcagaacc	acatccctgt	4500
gttttagtccc	gcacttacag	acggctcgtc	gggcgacatg	atcttcttcc	attcctacaa	4560
gaaccgggc	ctggctcctg	acatcgttga	gggtgaggcg	ctagggccac	agaggagagg	4620
ggaaggagg	ctggctgagt	ccaaggcctg	acttcggcgc	tcttcccca	gacctgaggc	4680
tcatcaacac	acaggccatc	tttgccaagt	gcactgggat	gatcattctg	ggcggggcg	4740
tggtcaagca	ccacattgcc	aatgccaaacc	tcatggtgag	tgggggtggc	gcttcggccc	4800
actctgcaga	catgtgtgt	ggtgggccta	tgccatgtgc	tggttagaca	gcatgaacta	4860
gacaggccag	gatccctgct	ccccgggact	gatgttctag	taggggagat	agcaaacaa	4920
tgacatccac	gtcagggggc	agtcattgct	acggggaata	ctaaatgatg	gcatgagaag	4980
agaaaggggt	gctgtccaac	aagaggtttt	ggaaggaggc	ttctggaagt	gtgagctggg	5040
agcaggggtt	tggggaggca	tctcccagga	gctatgtggt	tgtctcccg	gccaggagtt	5100
tgtgtgtgtg	tactagcatt	gagcttctgg	attgcaaagt	tcccaggaga	gggaacagcc	5160
attgcaaagg	ctctggggcg	cctgaagtaa	tccaggaaca	gctgggtacc	tggtgagggg	5220
aagggtggag	ggtgagggcc	aggaggtgat	gcaggagggt	gccacaggga	gcctgtggg	5280
ccctgtgggc	tgaggcgggg	ctttggcctt	tgcaactgaga	gaagtgggag	aggacttgac	5340
tcgggttccc	atgctcccc	tggtggccat	gtggtgaaca	gatggtggca	ggtgagttag	5400
aactccagtc	caggacagtg	gtgaccatgc	agggatcagg	aggcaggcgg	tggttggtatt	5460
tgaggggcct	ctgaagatag	agttgctggc	agctcctgcc	ttgcagatgg	ggcagggttg	5520
ttgacacctg	gctgttgggt	ctggggaaac	acagccatcg	ttgccagca	gctctagtga	5580
ccccagacat	tgacatgggc	cctgtctggg	agcgaatgtc	tgtgaagggc	ttccttcac	5640
tgggacacac	ctctcagcct	gtttggctac	ggtgtcctcc	ctctgtgtct	gtctcctgtg	5700
actggctgac	tgggcccacc	gtgccccgc	ctccccacag	cggaaacggg	ccgactacgc	5760
tgtttacatc	aacacagccc	aggagtttga	tggtctctgac	tcagggtgcc	gaccagacga	5820
ggctgtctcc	tggggcaaga	tccgggtgga	tgacacagccc	gtcaaggtaa	gcgctggctg	5880
ggtggggcat	agggtctctg	ggacgatgag	tgtgggtccc	atggcttacc	cagggtcccc	5940
cctaccagg	tctatgtctga	cgctcctctg	gtcttcccc	tgcttgtggc	tgaaaccttt	6000
gccagaaga	tggtatgcct	catgcatgag	aagaacagg	actgagcggc	tgcggtccca	6060
ggaaggctct	accccctctt	ctatttatta	atttgcagac	ccagcccctc	ccctactttt	6120
tggtcagcta	cgtctctaga	ataagatggt	atctgaagtc	cttccatgtc	tgtgtctcgg	6180
tccttgggtc	tggttgggtg	tcccctggct	tcagcctgct	ccatcctctg	cctcataggc	6240
ctcctctcgc	cagcactgga	cgctgcctcc	catggcggtc	agcaggcagg	gctctgttgg	6300
gtggtaggcc	agcgactgca	ccacaccgga	accacaggc	agggccagag	ccagcgacc	6360
ctgtggagcg	aggggtaggg	agtgggttat	tgtagctggg	ctgtaccctg	gtttctgagg	6420
tccctgggca	cccccatct	cagtcctgcc	tgaagccctc	agtcacctct	ccccgacctt	6480
cagccacctg	cctctaattg	cctcctagac	actgcaaaat	taatctacct	cagactgagc	6540
ccctcagtag	ctctgtccta	ccagggtgtc	aggccgcaag	tcttggggagc	ctcttattga	6600
ttttttattt	tttaaaatag	cagagatggg	gtcttaccat	gttgcccagg	ctgggtctga	6660
actcctggcc	tcaagtgatc	ctcctgcctt	ggcctcccaa	agtgttagga	ctacagggtg	6720
gagccaccat	gcctggcttt	gggagtcttt	ttctttttct	gttttttttt	gagatggagt	6780
cttgcctctg	gcggcagctg	gagtgacatg	gcgcctctg	ggctcactgc	aacctccgac	6840
tccctagttc	aagcgattct	cctgcctcag	ctcccaggt	agggtgggatt	acaggcacgc	6900
gctaccatgc	ccagctaatt	tttgtatttt	tagtacagat	ggggttttcac	catgttggcc	6960
aggatgatct	ctatctcctg	acctcgtgat	ccacccccct	cggcctccca	aagtgtctggg	7020
attacagggtg	tgaaccacca	tgccctggcg	ggagtctttt	tcttgtacca	catgttctct	7080
tatcagttat	tcctcttggc	tctgtctcta	gaccatgtcc	agagactgct	gattttctgc	7140
cactaccatg	tttggagcat	gccttgctca	cagcttgctc	gttccctgcc	accagctggg	7200
ctccatcctg	tccatttggc	agccccaatg	atccccactt	cccctgggtcc	caacacaatg	7260
taaacagttc	ctcaagcaag	ccatgcttcc	tctttccacc	ttgaaaatgt	cccttgatgt	7320
gcctgcctc	caaggcaact	tctgttctac	tgggcccata	agaaataggt	ggaacattct	7380

tgctacctta	gttcctaaag	caagagcttg	tccgccaaagt	cttcagggcc	cccccggttc	7440
cctccatcct	cttatgggccc	ttagttcccc	tggccaagcc	cagcgtgat	gtctcctttg	7500
ccgagattcc	cccggctctg	accccaactac	accaggatgg	tctgtttctg	gcctgactcc	7560
ccaccaggct	gggacatgtc	aaggacaggg	ctcagggcct	gaaaccatgc	acagggatgc	7620
taagatgtag	ctccagtttc	ttgaatgact	gcagccctat	ctcacccaag	gttagacatg	7680
gccgtcggct	cccccttgcc	caggggtcag	tgcaggttgc	tcggcctggc	atctgcagcc	7740
cagcctgacc	ccggatcttg	ccgcacctgc	cgccaccctg	aagcctttgt	ttcctgactg	7800
atgcattgcg	aggctacacc	tcttaacata	tgtgtttccc	tttgcttggg	atgcccttcc	7860
tgcctcatct	tctctctagc	ccaagctggg	cacggtgtct	caggcctgta	atcccagcac	7920
tttgggaggg	cgaggcggtg	gaatcacttg	aggtcaggag	tttgagacca	gcctggccaa	7980
catggtgaaa	ccctgtctct	actaaaaata	caaaaattag	ccaggtatgg	tggtaggggc	8040
ctgtataccc	agctactcag	gaggctgaga	catgagaatc	acctgaacct	tggggggaag	8100
aggttgacgt	gagctgagat	ggcgccactg	catttgccctg	ggcaatagtc	tcaaaaaaag	8160
aaaaaagggc	cgggtgtggt	ggcttacgcc	tgtaatccta	gcacttggga	aggctgaggt	8220
gggtggatca	tgaggtcagg	agttaagac	cagcctgacc	aacatagtg	aaccctgtct	8280
ctactaaaaa	tacaaaaaatt	agctgggtgt	ggtggcacgc	acctataatc	ccaactactc	8340
aggagactga	ggcaggagaa	tcgcttgaac	ttgggagggc	gagtttacag	tgagccaaga	8400
ttgcgccact	gcactctagc	ctgggcgaca	gagcaagact	tgtctcaaaa	aaaaaaaaaa	8460
aaaaaataaa	aagatcctag	ccttcaggcc	ctggagtgc	tgaggtaagg	acagggctga	8520
gatggggcag	gcattctagg	atgaagtagg	gctgggggca	cctcacctcc	accaggtccc	8580
agaagaacac	cttcccgctc	tcagaacagc	tgaccacatg	tgtgtcacgc	tcgctcaggc	8640
agcagtcacg	cttgtattcc	tgggtcttat	ggcccttgta	cctaagggtg	gacaggatcg	8700
gggggcttgg	tcctctccag	gggtgggaga	ggagggaagg	ggatccccac	gaccacaagg	8760
actcactcgc	ccagcagctc	cctgtgtct	ttgtccagga	gccgcaatgt	ggagtccagg	8820
ctggacacca	gggtgcactg	cccatcccg	ctgaagcagg	tgcaggtgat	ggggccttgg	8880
gggaaggggtg	ggtaggtgag	tgaggggtgg	gtgcccctgg	ttggccccc	atcttccctg	8940
cctgtcccac	atccccagcc	acactcactg	cccacgtagt	ctgagaagag	ctgccccatc	9000
cttaggtcat	agcgtctcac	gcggccatcc	acggagctgc	aggagagggt	agatccagcg	9060
ggaaccttga	ctacactcac	atggctccag	gcagccctgt	gccttcccag	cccagtgggc	9120
ctgctcttcc	agtgcacagg	agtggaatcc	tgaagctctg	gccttgagac	tcaggcccag	9180
ggccaattac	gtcctactcc	atcatttcca	agaccacac	cccctttcca	agcccttgga	9240
gtccttctga	ttcccccttt	tcttcccttt	gtttgagaca	gagttttgct	cttgttgctc	9300
aggctggagt	gcaatggcat	gatcttggct	caccggaacc	tctgcctccc	gggttcaaga	9360
gattctcctt	cctcagcctc	ccgagtagat	gggaalacag	gcatgcacca	ccacgccttg	9420
ctaattttgt	atttttagta	gagacgggtt	ttctccatgt	tggtcaggct	ggtctcgaac	9480
tcccaacctc	aggatgatcc	cccacctcag	cctcccaaag	tgtctgggatt	acaggtgtga	9540
gccaccccac	ctggcccaat	tccccctttt	cctgcattct	ccagctcctc	ctcctcagta	9600
ctcagtccca	ccactttccc	cactacccag	caccagcatc	tagactgttc	tggctctcct	9660
gcacccccca	cagccaccag	aggagcact	tttcaagta	cagttgacct	atgaacaaca	9720
cggtttgaac	tgaacgcgtc	cacttatatg	tggattttct	tctgcctcta	tcagctgtga	9780
gacaccaaga	tcaatccctc	ctcttccctc	tcctctgctt	tctcaacacg	aagatcttta	9840
tgacgatctc	ttcacttcca	cttaatgaat	agaaaatata	ttttttccac	caggcgcggt	9900
ggctcacgcc	tgtgattcca	gctctttggg	aggccagggc	aggtagatca	cgagggtcaag	9960
agatggagac	cctcctggcc	aacatggcga	aaccccgctc	ctactaaaaa	tacaaaaaatt	10020
agctgggcgt	ggtaggcacg	gactgtagtc	cagctacta	gggaggctga	ggcaggagaa	10080
tcgcctgaac	ctagaagtta	gaggttgacg	tgagccgaga	tcacgtcact	gcactccagc	10140
ctggcaacag	agcgagactg	cgtctcaaaa	aaaacaaaaa	ttcttccctt	tgattatttt	10200
tatgtattta	tttatttaat	ttatttactt	attttgagac	ggagtcttgc	tctatcgccc	10260
aggagtgtag	tgggtcgatg	tcggctcaca	gcaagctctg	cctcctgggt	tcactccatt	10320
ctcctgcctc	agcctcctga	gtagctggga	ctacaggcgc	ctgccactat	gcccggctaa	10380
ttttttgtat	ttttagtaga	gacgggggtt	caccgtgtta	gccagaatga	tctcgatctc	10440
ctgacctcat	gatccgcctg	cctctgcctc	ccaaagtgtc	gggattacag	gcatgagcca	10500
cagcgcccg	cctatttttt	tttatttttt	gaaatcattt	tatctttttt	tttttgagat	10560
ggagtctcac	tttgtcgccc	aggctggagt	gcagtggcac	aatctcggct	cactgcaacc	10620
tccaactccc	gggttcaggc	gattctcctg	cctccgcctc	ccgagtggct	gggattacag	10680
gctcccgctc	ccacacctgg	ctaatttttt	catttttagt	agagacgggg	tttcaccatg	10740
ttggccaggc	tgactcaaac	ctcctgacct	caagtgtact	gcccaccttg	gcctcccaaa	10800
gtgctgggat	tacaggtgtg	agccaccgtg	ccggccaga	ttattattat	tttgtagaca	10860
gtctgtcttt	caccacgcat	ggagtgcaat	ggtgcctcga	actcttggac	tcaagtgtat	10920
cttcacttcc	agcctcccaa	gtagctggga	ttacagctgt	gtgccactgt	gcccagctga	10980
gagtaggttt	taatctgagc	atgggggcag	ctatgattcc	ccgtagcacc	tggggtgaga	11040

ccaggtcctg	gctccactca	ccctgccagg	atctcgtggt	ctgacacctt	cacactggac	11100
acgccatctc	tggcctcatc	cagcgtctgc	actggctcag	gcctccgtga	gcggcaatcc	11160
caacagcgga	tactggaatc	aatagagcct	gtgaggccag	catgatggtg	aggtcaggtt	11220
tggaggggga	gggcagcacc	ctggggcccc	gtgcttaggc	cccagactca	ccggacagga	11280
taactgtggc	ctcttcatta	aactgcaccg	tgttcacctt	ctgagaaaagt	tattgccact	11340
cagaggaggc	tggacttttg	aggactggga	taaaggcagg	gttcccagtg	tcggttaaag	11400
caagggcgaa	ggggagggtga	aaggtttttg	gggaacagca	aggacagggg	ttggtgactg	11460
cctagcctgg	catgcgagtg	gggggatcgt	catctgggga	agggatcctt	acggtgtaat	11520
gggggtggcc	gtgtcaccac	ctatgcgcta	atacgggtcc	cctccactca	aatgaggggtc	11580
tccaggtctt	cactcaccac	tgcgtggccc	cggaatttgc	gcacgacctg	ccctgatgcc	11640
acatcccaca	gaaccaccgc	cttgtccccg	ccgcggagc	agagactact	gttgtcaaag	11700
gagctggagt	aaaggaggag	gaggatcagc	atcgacctcg	gatcccagcc	tcagcgcctc	11760
catcccagcc	tgggtccccg	ctcaccgggc	cgcatccagc	acctcgtagc	cgtggccgct	11820
gtacgtccgc	agcagcgtcc	cccgaagcgg	gttccacagc	ttcagcgtct	tgtcactgcc	11880
gcacgtcagg	cagtaattgc	catccactgg	ggaacaccag	gcgggggtta	ctgggcccgtc	11940
gatctcagga	ggcggggagg	ggaccgcgaa	tgaagacgaa	ggcgctcacc	attaaatcgt	12000
acggctcgca	ctgccccctg	cccgcagtc	agcgtcttca	accgtttctg	cggcagctct	12060
ggagccgcgc	gctttggctc	agggaagcc	atgtctccag	gactccttcc	ttgcagcctt	12120
aaatcgggtc	gtacggaaaa	ttcgcgcct	tagaaaacca	cgcttgggtg	taaccttatt	12180
attgttcttc	ctgacctact	tcctgtttat	cacttccggg	ttcatcattt	tggcatttgc	12240
gtgatcgggt	tggaaactatt	gaagcccgtc	ttcaggttct	tttccccatt	ttccctttga	12300
aaggaaagact	tctggcttct	cctaaatctc	cgttctctgg	gtaaggggag	tccaagcctc	12360
tgtcatgagg	aacggaaatg	cgagggcctc	gggtgttact	ctaaaatccg	ccctcagctt	12420
gcacgcccga	agctgcgatt	cctgcagcgg	aagaggcgtg	atctggcctt	cgactcgcta	12480
tgtccactaa	caatatgtcg	gacccacgga	ggccgaacaa	agtgcctgag	tgaggacccc	12540
agegctcgtg	gcacgggttc	gggttgtggg	tgtggatcgg	ggccctggga	agcgccgtgc	12600
tatccccggg	gcaggacctg	agcggcccctg	accctcgagc	ctgtcgcagg	tacaagcccc	12660
cgccgagcga	atgtaacccg	gccttggacg	acccgacgcc	ggactacatg	aacctgctgg	12720
gcatgatctt	cagcatgtgc	ggcctcatgc	ttaagggtgg	cggggttag	cttctatggg	12780
tgtagtgtga	cctgagaacg	aggccccggg	gcgggttttg	aatgaagcgg	ggtgtcttgt	12840
cattgctgat	ggggcgggac	ctgagatcgg	ccgggagtg	ggctgcgatg	acgctgggcc	12900
gagaaagccc	caatctttgg	tgaagtcaag	gattcgaatc	aggttgggga	tgtggcagat	12960
tggctcgcga	gtggggccag	gctttgaagc	aacttggaga	ggagttgttg	aaaaagggca	13020
gggtcttaag	catgtgggat	gtcagagtct	ctcttgggtc	tgagagacgc	aggccagaca	13080
gtaggactag	aaaccacgta	tctagagtat	gccatgagca	ggtgggactg	aggaattccg	13140
ggtggggcaa	ggtcccagct	gcatacagatg	gaatcagtg	gcatgatctg	gtgtctggaa	13200
agggtgcttc	ggggactcat	tgttgtgcct	ttcactaacc	tgcccaccca	cttacctttc	13260
cctagtgtga	tgggtgtgct	tgggtgcgtc	cttcatcagc	cttcccaact	tttgccaact	13320
ctcggagctc	ggaggacacg	aagcaaatga	tgagtagctt	catgtgagac	ttgccctaca	13380
gaacaagtga	ctcttgagta	aggggtgggg	ggaccccagc	ctggccatcc	tagactgaca	13440
cctctctcct	gtctcaggct	gtccatctct	gccgtggtga	tgtcctatct	gcagaatcct	13500
cagcccatga	cgcccccatg	gtgataccag	cctagaagg	tcacattttg	gaccctgtct	13560
atccactagg	cctgggcttt	ggctgctaaa	cctgctgcct	tcagctgcca	tcctggactt	13620
ccctgaatga	ggccgtctcg	gtgccccag	ctggatagag	ggaacctggc	cctttcctag	13680
ggaacaccct	aggcttacct	ctcctgcctc	cttccccctg	cctgctgctg	ggggagatgc	13740
tgtccatgtt	tctaggggta	ttcatttgc	ttctcgttga	aacctgttgt	taataaagtt	13800
tttctactct	gctgtcagcc	tcttctgttc	agtggggtgt	tcctcctacc	tggcgggaag	13860
ggctctagcc	ccataggcct	ggtgtggggc	cccagctctg	aggcttctgg	ctgttcatlt	13920
gcttacttca	taaaccttgt	gtcttaagtc	aggtgctagg	gacaagacag	tgacttctgc	13980
cctctggcaa	ctcaccagat	ggccctgctg	acctagataa	tctaggcttt	ggtttctctt	14040
tttttttttc	ctttttaaga	aagaaaatgg	tcttgatctg	tcatgcaggc	tgagtgcagt	14100
ggcacaatct	atgttcaactg	cagcctcaaa	ctcctgggct	caagcaatcc	ttccacctca	14160
gcctgccacg	taactgggac	cacaaatgcg	tgctaccatg	cccagttaat	tcttgttttt	14220
tttgagacag	agttttgctc	ttgttgccca	ggctggagg	caatggcatg	atcttgatct	14280
cggtcactg	caacctccgc	ctcccagggt	caagtgatcc	tcctgcctca	gtctcccaag	14340
tagctgggat	tacaggcatg	tgccaccatg	cccagctaat	ttttgtatlt	ttacattttg	14400
tgtaaaaatta	caaattttgt	gttttcaaac	ccgtctctac	aaaacaaccc	atgttgccca	14460
ggctggtctc	aaactcccag	gcccaagtga	ttcaccagcc	tggccctccc	aaagtgcctg	14520
gattgcaggc	ttgagccact	gcgcctgccc	tgggctttgt	tttcttatca	gagaatgaac	14580
tggttaggaat	tgggaaaggc	atgaaagact	cggggtcctt	ccccacttgt	cagaccctct	14640
tttctctccg	gaacacccag	ggatccttct	caaccaggct	ggatcccatc	cctggtactc	14700

caggggtatt	tacccaacgt	cccaatcccc	acagtatagg	actcttcac	agatcctcct	14760
cttaggcaag	ctaggtcctt	ccaggaccct	agcgctgaag	gtccatggga	cggacaccct	14820
ggattcccat	ggacacacta	caccggctag	gaaaacccgg	cccccttagg	aaaagcactt	14880
ctgtccttac	cggcattaag	aggcattccg	tcttggaatt	cgggcattaa	gaggcattcc	14940
gtcttcctag	cccgtagagac	gccagtgtca	ccttttagccc	aaccagtgcc	ctgaggggtg	15000
cattttccta	ccttcctgta	acgacccccg	ggattgcca	gggctacagc	ctctctcccg	15060
tgagcctcca	gaccgcgccc	tggccccgcc				15090

<210> 591

<211> 3830

<212> DNA

<213> Homo sapiens

<400> 591

ctgggacacg	tggctcatgc	ctgtaatccc	agcacttttg	gaggctgagg	tgggcggatc	60
acgagggtcag	gagatcaaga	ccatcctggc	taacatggtg	aaacccccgtc	tctactaaaa	120
atacaaaaaa	ttagctgggc	gtgtggcggg	cgctgtagt	cccagctact	tgggaggtcg	180
aggcaggaga	ctggcgtgaa	cccgggaggt	ggagcttgta	gtgagccgaa	atcacaccac	240
tacactccag	cctgggcgac	agagcaagac	tccgtctcaa	aaaaaaaaaa	aaaaaaaaaa	300
aagctctctg	attttagctg	ttaggtggga	gatgggttgg	aggataccaa	agccagcttg	360
caggctatgg	ggataaagaa	aacacctgga	tttcggacct	actttatagg	tagagggttg	420
cagacatgct	gagaaggatg	gatgtggggt	gtgagaaaag	gggagacagc	aagctgcgct	480
cctcatTTTT	aatttttatt	tatctatTTT	tgagacggag	tttcgctctg	ttgcccaggc	540
tggagtgcag	tggcaccatc	tcagctcact	gcaacctcca	cctcccgggt	tcaagtgatt	600
ctcctgcctc	agcctcctga	gtagctggga	ttatgggtgt	gcgccaccac	acccggctaa	660
tttttgtatt	tttttagtaga	gacggggttt	cgccatgttg	tccaggcttg	tctctaactc	720
ctaacctcag	gtgatctgcc	ctccttggca	tcccaaagtg	ctgggattac	aggtgtgagc	780
caccgcgccc	agccccaatc	cctatTTTT	agtctagtgg	atgagtggag	ggtggggccg	840
tttgctgaga	tgcagaaaga	tcagggatag	gtggagaggg	agctgagggg	gcaactttga	900
ggtccaagcg	aggatgtcaa	ggaggatgtc	tgtctcctcc	aacaaggtag	gtcattcca	960
gcctcacggc	ttttgctggt	ctgtcttccc	atgtgcagga	aatggcctct	ctgcatcttc	1020
acatacgggg	atTTTctcag	ccttctggct	ttggctcaaa	tctcacctcc	ttggcgctct	1080
tcacccatcc	ctccaactaa	aatcccgaac	tctccacct	aaagactcaa	attatcctgt	1140
ttaaatcctg	attgcgctgg	gcgcgggtgg	tcacacctgt	aatcccagca	ctttgggagg	1200
ccgaggcagg	cagatcacct	gaggtcagga	gttcgagact	agcctgacca	acatagtga	1260
accccatctc	tactaaaaat	acaagaatta	gccgggctg	atggctcatg	cctgtaatcc	1320
cagctactcg	ggaggctgag	gcaggagaat	tgcttgaaac	tgggaggcag	aggttgcgat	1380
gagtggagat	cgcgcctattg	cactccagcc	tgggcaacaa	gagcgaact	ctgtctccaa	1440
aaaaaaca	aaacaaaaaa	ggcctgatag	cactcaccac	tattgttaac	tttctatctt	1500
cccaatcaga	ttgtgggctc	cagtagggca	gggtccacat	cttggctctg	ttcaccacta	1560
aatccttagt	gcctagcacg	gagccacca	tagagaatag	actacatgaa	ttgtagagt	1620
agtgaataat	cctgttggcc	gtatgcactg	ttaggagggt	gtgtttgaga	tacagatgac	1680
accagggtc	tcacattctt	gcaggaggga	aagagacgtc	agccctgggt	cccagaagag	1740
gccactgacc	cagtgggagt	tcagggaagg	cttcccagag	gagggtggag	tgacagctgc	1800
agctataagg	gaaggaagaa	cagagcggtta	tcagcatgt	gaaggctttg	gagacttgtg	1860
agggcacgaa	ccgggctcac	tatcccat	gacaaaagt	gctgaggga	gatgaaactg	1920
tgtctaaact	tgcctggtga	ccgaaatctt	gtccatgggt	gacgcttaag	aagtgaccct	1980
cggccggggc	cagtggctca	cgctgtgaat	cctggcactt	tgggaggcca	aggcgggcg	2040
gtcacgagtt	caggagatcg	agaccatcct	ggctaacacg	gtgaaacccc	atctctacta	2100
aaaacagaaa	aaattagccg	ggtgtggttg	cgggcacctg	tagtcccagt	tactcgggag	2160
cgtgagtcag	gagaatggca	tgaacctggg	aggcagagct	tgagtgagc	cgagattgag	2220
ccactgcact	ccagcctggg	cgacagagcg	agactctgtc	tcaaaaaaaa	aaaaaaaaaa	2280
aaaagtgacc	ctcataaaaa	aattagctgg	gcacgatggt	gcacactagt	cggaatgctg	2340
gggtgggagg	atgacctgag	tccgggagtc	agagggttga	gtgggcccag	atcgctcac	2400
agcactccag	cctggcgaca	gagtggagacc	ctatcaaaaa	atagcagcag	gccaggcgcg	2460
gtggctcatg	cctgtaatcc	cagcactttg	ggaggctgag	gcgggaggat	cacgaggtca	2520
ggagatccgg	actaccctgg	ctaacacggg	gaaacccccg	ctctactaaa	aatacaaaat	2580
attagccggg	cgtggtggcc	ggcgctgta	gtcccagtta	ctggggaggc	tgaggcagaa	2640
gaatggcggtg	aacctgggag	gcggagggtg	cagtggagccg	agatcggtgc	actgcactcc	2700
agcctgggag	acagcgcaag	actctagctc	aaacaaacaa	acaaacaaaa	cagcaacaac	2760
aacaacaaaa	ccatcctccc	ctcccagggg	gacagaacag	aaacgaatgg	gcgagtgccg	2820

ggccaagcag	tgggtctcca	gcaggtggca	ttaaaatagg	aattttggct	ggggacggtg	2880
gctcacacct	gtaatctcag	cacttttgaa	agcccaggcg	ggcggtcacc	tgagggcaga	2940
accagcctcg	ccaacatggt	gaaatgccat	ctctactaaa	aataaaaaat	tagccaggcc	3000
tgggtggtgg	tgtctgtaat	cccagcaact	cgggaggctg	aggcaggaga	atcgcttgaa	3060
ccaggggggc	agaggttgca	atgagtcagg	attgcaccac	cgcactccag	cctgcgtaac	3120
aagagcgtgt	aactcttgct	tcaaaaaata	attaaataaa	taaataataa	aaataaaaaa	3180
gaatcttcat	tcatgggaag	tcgagaacac	atgaaaacaa	gtaaaggccg	aagcgcagtg	3240
gctcacgcct	gtaatcccag	cactttggga	ggctgaggcg	ggcggataac	ctgaggtcgg	3300
aagtctcgaga	ccagcctgac	caacaggagg	aaaccccgcc	tctactaaaa	atacaaaatt	3360
agccggggcat	ggcgggtgcat	gccagtagtc	ccagctactc	gggaggctga	ggcaggagaa	3420
tcgcttgaac	ccggaatgtg	gaggttggtg	tgagctgaga	tcgggcaatt	gcactccagc	3480
ctgggcaaca	agagcgaaac	cctgtatcaa	aaaaaaaaaa	aagaaaaaaa	aaggaagaaa	3540
aggcctaaag	gcgccggggc	cgtgtgggtc	cgctgtgaat	cccagcactt	tgggaggccg	3600
aggcggggcga	atcacgaggt	caggagatcg	agaccagggt	aaaccccgtc	tctactaaaa	3660
atacaaaaaa	attagccggg	cgtggtgggt	ggcgctgtga	gtcccagcta	ctcgggaggc	3720
tgaggcagga	gaacagcggt	aaacccgaaa	gcggagctgg	cagtgagctg	agatcgcgcc	3780
actgcactcc	agcctgggtg	acagagcgag	actccgtctc	aaaaaaaaaa		3830

<210> 592

<211> 20245

<212> DNA

<213> Homo sapiens

<400> 592

gcctttccag	ggccggggaa	ccccaggagg	aagctgctga	gccatggggc	cctacgcgcg	60
ggcttcgggg	gtctgcgctc	gcggctgcct	ggactcagca	ggccccctga	ccatgtcccg	120
cgccctgcgg	ccaccgctcc	cgctctctct	ctttttcctt	ttgttgctgg	cggctgccgg	180
tgctcggggc	gggggatacg	aggtgagtg	ggcctccgag	ctgaaacgta	caggaggcag	240
agtgaacccc	agaatacagt	ctagaggtgt	gggtgggtct	gtcctgtggg	tgtctagtga	300
atggctgatg	atatgacagt	gtggtctgag	tgcgtgcttt	gtgtcattgc	gaggtctggc	360
tgtgcgcata	tgagtatagg	actgtgtctg	attgtacctg	cctccgtgtc	tccgggatgc	420
ttgcctagac	tttgtctgca	cttaactgtg	ggattggagg	ggcaggaggt	ggcagggggt	480
gagcagtgtg	tgtgtggggg	gaggtgctgg	ctgagagctg	ggactctgga	gtctgcctga	540
aattccagcc	tagctcttac	acttcctgag	tgtgtgacgt	tgggcaagtc	acctatcctc	600
tctaaagcct	agtgccctca	tctggaaact	ggggataaca	tcaccccacc	tcccacgggt	660
gccgtctgct	gtcggcaaat	gctgaacaaa	catcagctac	ttctattatt	attttcccgg	720
agtgtgaatg	agagctgccc	tgtgggggtg	tgcaaagtgg	agttgtatct	atgagcacia	780
ctatgtatgt	gtgtgtcctg	cctgggaggg	cctggcctcc	tctgcacata	ggcgagatca	840
ggcctctctg	agtcactcac	ctctagatca	agacttactc	tgcagcccc	gacctcgggg	900
gttattgaca	aggtatgtgt	gtttggggtc	cctgtgcaga	catgccccac	agtgcagccg	960
aacatgctga	acgtgcacct	gctgcctcac	acacatgatg	acgtgggctg	gctcaaaacc	1020
gtggaccagt	acttttatgg	aagtgagtag	aggatgggga	ctggctccctg	ggatccccat	1080
ggtccctgta	atccctctgg	gtcctggaca	ttaggggtgg	gccagtgcta	ccctaataatc	1140
cagggtttgg	gctcctctgt	ctaggaataa	cccccttggc	tctgctgttc	cctgagagcc	1200
ttatccctgt	tatccacagt	caagaatgac	atccagcacg	ccggtgtgca	gtacatcctg	1260
gactcgggtc	tctctgcctt	gctggcagat	cccacccgct	gcttcattta	cgtggagatt	1320
gccttcttct	cccgttgggt	gcaccagcag	acaaatgcc	cacaggaagt	cgtgcgagac	1380
cttgtgcgcc	agggtgagcc	tacccaagg	aagtgaanaag	aggaagccca	gccagcttcc	1440
tgcttctgca	tctctgggtt	ctgagatttg	tcatgccacg	tgcaagctgt	ataacatgcy	1500
tgtcgctccg	cctgcctgga	ctctccattt	ggagacctcc	tatacatccc	acaaagcccc	1560
acctgctgtg	catcctctgg	gaagcctgcc	atgcaggggg	cctctttccc	atatctggga	1620
actatggcct	gggagcgacc	cctcttgctc	ttccgccaga	aatgtgtaca	caggcaggct	1680
ttcacattcc	cagtatcacc	caccctactc	ccactcctgg	ctctgaccgc	tgaccctgac	1740
cttgctgtgc	ctggcacagg	gcgcctggag	ttcgccaatg	gtggctgggt	gatgaacgat	1800
gaggcagcca	cccactacgg	tgccatcggt	gaccagatga	cacttgggct	gcgctttctg	1860
gaggacacat	ttggcaatga	tgggcgaccc	cgtgtggcct	ggcacattga	ccccttcggc	1920
cactctcggg	agcaggcctc	gctgtttgcg	caggtgcgac	ccgggacctc	tcttggggcc	1980
acttcttcac	tcactctggc	tcctccctcg	cccagtcaaa	ccccgccttc	tccctgcaat	2040
ctcacaagga	ccaggcccag	gcctaggcct	gttgaagccc	tgccccctga	gtgagccgta	2100
aagccagtg	cttttgagct	ctggcctcag	ccggctatgc	ccagcccagg	ctgaccacgc	2160
tccggctggc	tccgcctctc	cccctaatag	gcccctcttg	gtgttctggc	cccacccact	2220

agctcggggtc	ctggctcctc	cctaaaccgg	gtggcaagt	gatgcctagg	ctgccttaaa	2280
aacagggttca	ttacctgtgc	tcagacccca	tccatcctca	ggctgtggaa	gggggaacct	2340
cattcctgga	gtcaggcctg	ctctgcgctt	tgacagtgc	ggggagggtga	acctgggttc	2400
tgatgttga	cccgcctct	ccctgctagc	ccaagggtgt	gagttctgaa	acttccccaa	2460
gcttggaat	aagctggagg	cctctctgtt	tcagccctac	gtgtttttgt	ttttgttttt	2520
tgagacagg	tcttgctgtc	atccaggctg	gagtgcagt	gtgcaatcct	aactcactat	2580
agcctcaatc	tcccggaatc	aagcgattct	cctgtctcag	ccccctagt	agatgagact	2640
acaagagcgc	accactacgc	ctggctaatt	tttaaatttt	ttgtagacag	tctgcccggtg	2700
ttgtgcaggc	tgggtctcaa	aactcctggg	tttaagtgat	cctcctgttt	tggcctccca	2760
gaaggctggg	atcataggca	agagccacca	catcgaccta	gcactgcttt	ttaacctgtg	2820
ctctgacctg	ccccctccaa	gcagagggga	gtttgggtgt	gagagggctg	ggcactaatt	2880
caactgcct	ttctctccct	catcccaga	tcggcttcga	cggcttcttc	tttgggcgc	2940
ttgattatca	agataagtgg	gtacggatgc	agaagctgga	gatggagcag	gtgtggcggg	3000
ccagcaccag	cctgaagccc	ccgaccgagg	acctcttcac	tggtaggggg	cttgggtgagg	3060
gcagggccag	ccatgggtgc	acacactcag	aagggccctg	ggcttgatat	ctgctctgtt	3120
gtcactgtcc	tgggaattcct	atagctctggg	aacaaaggcc	ctgcatttcc	ttttgcattg	3180
ggacacaaat	tctgaagccc	atcctgggtg	ggacatggcc	ggctttgaaa	ccaggggaagg	3240
tctgggtgat	gggccacccc	ttgaacttgg	tgtgacctgc	aggtgtgctt	cccaatggtt	3300
acaaccgcct	aaaggaatctg	tgtctgggatg	tgtgtgtgt	cgatcagccg	ctgggtgagg	3360
accctcgcag	ccccgagtag	aacgccaagg	agctggctga	ttacttccta	aatgtggcca	3420
ctgccagggt	aacctgtgtg	tccagaacct	tcgagtcagg	tatatacaat	acaatgagct	3480
ctttccatgg	tacaggcatc	ccctaacacg	ttctccttat	ttttaatttt	tttgagacag	3540
tcttactctg	tcaccagagg	tggagtgcag	tgggtgcgac	tcggctcact	gcaacctctg	3600
cctcctgggt	tcaaaacaagc	acatccagct	aattttttgta	tttttgact	ggggtctcat	3660
catgttgtcc	aggtcgtgtc	caaactcctg	agctcaagt	atctgcttgc	ctcggcctcc	3720
caaagtgcgc	ggattacagg	catgagccac	cgcacctggc	ctctattttt	aacattttta	3780
tttattttat	attatttttt	tttttttgag	acagagtcct	gctctgtcac	ccaggctgga	3840
gtgcagtggc	atgatctcag	ctcactgcaa	cctccgcctc	ccgggttcaa	gcgattctcc	3900
tgccctcagc	tcctaagaag	ctgggattag	aggcacctgc	caccacaccc	agctaatttt	3960
tgtattttta	gtagacaggg	tttcgtcatg	ttgaccaggc	tggctctgac	ctcagggtgat	4020
ctgcccgcct	caacctccca	aagtgtcggg	attacagggt	tgggccactg	tgcctagtct	4080
atttttaaca	tttttgattga	gaattccttt	tttatttttt	ttagactcac	tctgtcgcct	4140
aggctggagt	gcagtggcac	gatctcggct	cactgcaacc	tccacctact	gggtccaagc	4200
gattcttctg	cctcagcctc	ccgagtagct	gggattacag	gtgcccacca	ccatgctcgg	4260
ctaagtttta	tgtcttttta	gtagaaagg	ggtttcacca	tattggccag	gctggctctg	4320
aactcctaac	cttttgaccc	acagccttgg	cctctcaaa	tgctgggatt	acaggcgtga	4380
gccaccgcgt	ccagccttta	acatttttat	aattaaaaaa	cattattttt	tcacagagat	4440
aaggtctcac	catgtggccc	aggctggctc	caaactcctg	aactcaagt	atcctcctgc	4500
cttggcctcc	caaagtgcct	ggatatagg	gtgagccacc	atgcctggca	taacacgttc	4560
tccttaaaaa	aatttttttt	tcctttcttt	aaaaattgat	ggctgggcat	ggtggctcac	4620
gcctataatc	ccagcatttt	gagaggccga	gatgggcaga	tcactctgaag	tcaggagtcc	4680
aagaccagca	tagccaaaat	gacgaaaccc	tgtctctact	aaaaatacaa	aaattagtcg	4740
ggtgtggtgg	cgcacgcctg	taatcccagc	tacttgggag	gctaaggcaa	gagagtcgct	4800
tgaacctggc	aggtggagg	tgagtgagc	cgagatcacg	tcacttcact	ctagcttggg	4860
cagcagagtg	aaactctgtc	tcaaaaaaaa	aattgtttta	gattaatttt	tttttttttt	4920
cttgagacag	ggtcttgc	tgtggccag	gttggcttta	aactcctaga	ctcaagcgat	4980
cctcctgcct	cagtctcctg	agtagctggg	attacagggt	tgagccctcg	taatcatggt	5040
ctcatgcccc	ctggaggaag	atgctattct	attcaccatc	acaatgtccc	cctcctggat	5100
ttatgtgcat	tcctcattag	aagagatagc	ataggctggg	caagagatag	catggcatgg	5160
tgactggatg	cctctttcta	ggtagtgggt	ccaagagaac	tgtctcaaca	ctgggtggcta	5220
cttttatctg	tgtcccaacg	ctcccaagtg	ccataacccc	acctatgcct	gtgcacccaa	5280
catccttgac	cccatataca	tcaaaacaca	gctatacaca	gggatggccc	aggatcctct	5340
ggcttcagga	ctccccctct	gcctgcagg	ccggtattac	cgcaccaacc	acactgtgat	5400
gaccatgggc	tcggacttcc	aatatgagaa	tgccaacatg	tggttcaaga	accttgacaa	5460
gctcatccgg	ctggtaaatg	cgcaggctcag	tgcgcctacc	ctgtgggtacc	cttgtgcaca	5520
tgtgcgcttg	catccggggg	ccttgggtta	tgtgcatagc	tctcagtgct	gtctttgttt	5580
tctattgttc	tatttggtgc	attctataac	aaatgaccac	acacttagca	gctcaaaaca	5640
acagaaatac	attgtcttac	agttctgtag	gtaagaagtc	cagcatgagg	ccgggcgcaa	5700
tggctcatgc	ctgtaatccc	agcatgttgg	gaggctgagc	cgggcagatc	acgaggtcag	5760
gaattcgaga	ccagcctgac	caacatgggtg	aaacgctgtc	tctactaaaa	atacagaaat	5820
tagctgggtg	tgatggtgcg	tgcctgtaat	cccagctact	cgggagcctg	aggcagggga	5880

atctcttgaa	tccgggagggc	ggaggttgca	gtgagcggag	attgtaccac	tgcactccag	5940
cctggggccac	agagaaagac	tctgtctcaa	aaaaaaaaaa	aaaaaaaaaa	aateccagcct	6000
gagtcctcacc	aggctataat	caagggtgtg	gcaaggctgt	gttccttctg	cagtctctag	6060
gagagaatat	aatttccttg	ctttttccaa	catctagaag	ttaccacacat	tcaaaatcta	6120
ttcttggctc	catcttcaaa	gccagccaca	tagcatcttt	ctgaccctgt	ttctgtaatc	6180
acatccccctt	ctctcattct	cacctcttct	gcctctctct	tccacatttt	atattatttac	6240
ttagagacgg	agtctcgctc	tgtcgcccag	gctggagtg	agtggcgtgc	tctcggtca	6300
ctgcaacctc	cgctctctgg	gttcaagtga	ttcttctgtc	tcagcctccc	aagtagctgg	6360
gactacagtc	gcgtgccacc	acgcccagct	aattttttgta	tttttagtag	acagggtttc	6420
accatgttgg	ccaggatggg	ctcgatttct	tgacctcgtg	atccaccccg	ctcggcctcc	6480
caaggtgctg	ggatttacaga	tgtgagccac	tgtgtggcct	aatttcccta	ctttaagttt	6540
ggctgtgaa	caacctcaat	tccatctgca	accttaattc	cccttttggc	atgtaatcta	6600
atgtggtaat	aggttctggg	gatcaggaca	tggacacttt	tgggcagtta	tcattttacc	6660
caacacagat	gtgttagtgt	tttgactaa	gtggcctgtg	gctgtggctg	tgtgcacagt	6720
cagtactctt	catcagcaca	gaaacttgct	tcccctctcc	catctcagac	accccttccc	6780
atcaatcttg	tcctcactac	ggtgcaatct	ccattcccac	cttccactcg	ctcccagcac	6840
tgtattttca	ccaaaacagc	tcttttatgt	catttatttt	tatttatttt	ttctttttaa	6900
aatttttatt	atttatttat	ttattgagac	aagagtcttg	ctttgtcacc	caggctggag	6960
tgcagtggca	tgatcttgcc	tcattggcaac	ctctgcctcc	tgggttctag	tgattctcct	7020
gcctcagcct	cccaagtagc	tgggactaca	ggcatgtgcc	accaaccctg	gctaattttt	7080
gtatttttag	tagaggcagg	gtttcactat	gttggccagg	ctggtctcaa	aactcctgac	7140
ctcaggtgat	ccgtccgcct	tggcctccca	aagtgttggg	attgtaatct	gagggtggcg	7200
gatcacttga	agacaggagt	tggagaccag	cctggccaac	atggtgaaac	cttgtctcta	7260
ctaaaaatac	tacaaattag	gtgggcgtga	tggcactcat	ctgtaagacc	agctactcgg	7320
caggctgagg	caggagaatc	gctggaacct	gggaggcgga	gtttgcagcc	agctgagatc	7380
gtgccactgc	actccagctt	gggcgacaga	gtcagactca	gtctcaaaaa	aaaaaaaaaa	7440
aaaaaaagt	tattgagcac	ctactgtgta	cattggggga	cacagctcgt	gcaaaacaaa	7500
catccttttc	ctcacatagg	tcactttctt	gttcctccac	cttgctcagg	tgaaagtga	7560
cctccattca	ttataaaaa	tgtgtctagg	ccgggcacgg	tgggtcatgc	ctgtaatccc	7620
agcactttgg	gaggctgagg	cgggcggatc	atgaggtcag	gagatcgaga	ccatcctggc	7680
taacacgggtg	aaactccgtc	tctactaaaa	aatgcacaaa	attagccggg	tgtggtggcg	7740
ggcacctgta	gtcccaggta	ctcatgaggc	tgaggctgga	gaatggcgtg	aaccacagag	7800
gtggagcttg	cagtgaagctg	agattgagcc	actgcactac	agcctgggca	acaaagtaag	7860
actccgtccc	aaaaaaaaaa	agtgtgtgtt	tttggtaaca	atctgacagt	cctgcaaaac	7920
gattattcct	gccctataat	gtcacactta	gtttttccac	aaaagttttt	aataataaag	7980
ttggaattat	tgtaaaagtt	tagtaaaatt	tcagggtttat	tcttgcatct	ctgaaatcct	8040
tttaaaaaag	cgtagtggtc	atgttttgact	tcagccaaaa	ttcattttca	caccaacca	8100
ttggcttgca	gcctcaaatat	gtattttagag	aaactgaacc	tatgggatgc	atgaatgtgc	8160
acacatgtgt	ggaagtgtgg	gccccagga	aggtgcggac	tcccaggggc	tactccgtc	8220
gcctccccca	gcagcaggca	aaaggaagca	gtgtccatgt	tctctactcc	acccccgctt	8280
gttacctctg	ggagctgaac	aaggccaacc	tcacctggta	tttggggaaa	ctggggagct	8340
tggggggggt	ggcatgcccc	gtgggtcatg	accctgccc	caatgcccct	gccgctgtag	8400
gtcagtga	catgacgact	tcttcccctta	cgccgatggc	ccccaccagt	tctggaccgg	8460
ttacttttcc	agtcggccgg	ccctcaaacg	ctcagagcgc	ctcagctaca	acttccctga	8520
ggtgggtagg	agccgggcta	gagggggcat	gcagccccga	ggcccagacag	gctgggcgcc	8580
ccaacatacc	cctctgcctc	cagggtgtgca	accagctgga	ggcgtgggtg	ggcctggcgg	8640
ccaacgtggg	accctatggc	tccggagaca	gtgcacccct	cagtaagtgt	cggggcccaag	8700
aggggaagag	gtttgcggct	gaagttggaa	accaccccta	ggccgcccc	ctcgagtttc	8760
ttcttttttt	tttttttttt	tttttttttt	gagacggagt	ctcgatttgt	ctcccaggct	8820
ggagtgcagt	ggtgcgatct	cggctcactg	caagctccac	ctcccgtgtt	cacgccattc	8880
tcctgactca	gcctcccag	tagctgggac	tacaggcgcc	caccaccacg	cccggctaat	8940
tttttgtatt	tttagtagag	acgggggttc	accatgttag	ccaggatggg	ctcgatctga	9000
cctcgtgatc	cgccgcctc	ggtctctcaa	agtgtggga	ttacaggcgt	gagccaccgc	9060
ccccagccgt	cctcgagttc	cttcttaaa	cctctaagaa	tcttgcccgc	cagcaccgga	9120
cctttcgctt	ccccttgggg	tctcagctga	gtcccacaga	acctcaccgg	actcattgtc	9180
tatgagcaga	tgaggcgatg	gctgtgtctc	agcatcacga	cgccgtcagc	ggcacctccc	9240
gccagcacgt	ggccaaacgac	tacgcgcgcc	agcttgcggc	aggctggggg	ccttgcgagg	9300
tgcgcggggc	gagacttggg	agacacgggg	gtggagacag	gaagggggcg	ggccagggcc	9360
tgggaaaggg	gacagagaca	ggtgtgaggg	gtagccgaga	gccctgtggc	ggggctacaa	9420
gggctcgtgg	gggcggggct	tgtaggaggg	ggggaaagat	acaggaacgg	ggcggggctt	9480
tggagggggg	aaggaggcgg	ggcgtgggca	agaggaggcg	gagacagcta	tggggtatag	9540

tcaagggcag	caggggtgggg	ctagaagggg	ttttggggcg	actcttgagg	gaggcgggac	9600
agagaccgga	acggggcggg	gcctgaggag	aggggaggag	tcaggcctgg	cgtcctgaac	9660
ccaccgggtcc	ctttgcgctc	ttccgcaggt	tcttctgagc	aacgcgctgg	cgcggtctcag	9720
aggcttcaaa	gatcacttca	ccttttgcca	acagctaaac	atcagcatct	gcccgtctcag	9780
ccagacggcg	gcgcgcgtga	gccgggacgg	gaggggtgga	tctagggcag	atgggcttta	9840
gagggggtag	ttggaaaatg	tttttgagg	actatacagg	agtgaatta	cgtgggctgc	9900
gaagctgggt	cagcagagag	aacaacgcat	ctcgaggggg	cttggcctta	agtgccgtga	9960
ccacactagg	accagccagg	ggtgtttctg	tgcaaagtgg	gtgggttttg	agaaggcctg	10020
ctgtgaccca	tgccctctct	gacccccgcc	tccccagttc	caggtcacgc	tttataatcc	10080
cctggggcgg	aaggtgaatt	ggatggtagc	gctgccggtc	agcgaaggcg	ttttcgttgt	10140
gaaggacccc	aatggcagga	cagtggccag	cgatgtgagc	caaacaacg	aatattcccc	10200
cgctgggact	cctccccag	tgggcatttc	ccatgcgcc	ccatggatat	cgctgtcttc	10260
catgaatacc	tcccaactcat	gcatactctt	tccccctctt	tgtatcttct	ccctctgccc	10320
cttaatatca	gtctccccct	gggaacatat	gcctcctgtg	agtggctctc	cctttttttt	10380
ttttttttga	gacggagtct	cgctctgtca	cccaggctgg	agtgcagtg	cgcgatcttg	10440
gctcacttca	aactccgcct	gctggattat	aggcatgagc	caccgtgcct	ggctggctct	10500
ccattttaat	accccgcctc	cccaggaaaa	tttattgctg	tttatggaca	tctccttcat	10560
tccagaaaa	gtcctcccc	aaacctcttc	ctccccgag	aacctgcctc	aagggtttct	10620
tcccctactt	cctccttcac	tcccccgact	ccatggtctc	tccaccctcc	cgggtgggtt	10680
ttttttccac	ctggtgaatc	ttctctgcaa	tcatttctct	ggaatctgac	tgtcccccca	10740
ccacacacac	ctccatttcc	tttccccatc	tcaggactct	tttcttctct	tgagtttttt	10800
gtctccatgc	atgtatagct	ttccatgggt	actcttgact	cagtttccct	cctcctttat	10860
ccgaggtggt	aatatttccc	agctcagaca	gccaggcgca	ccctccggag	ctgctgttct	10920
cagcctcact	gcccgccttg	ggcttcagca	cctattcagt	agcccagggt	cctcgttgga	10980
agccccaggc	gcgcgcacca	cagcccatcc	ccagaagatc	ctggtccctc	gctttaacca	11040
tcgaaaaatga	ggtgagaccc	catttcaatc	ccctttcctg	ctcctgtgac	aaatttgaag	11100
tgtcatgggt	agctgtgtgg	actctgggtc	agcagggtccc	taggcttatg	acctcctgtc	11160
acaactcccc	tcattgtgtg	tccttgagca	agtgcacctt	gtctgagcct	cagtgtcctt	11220
tcctggggact	gttatgagga	cccagtggtg	tcattgggtg	cacttgacag	acatgtcaga	11280
gttggtggca	ggtggtggtt	cgcaattttg	gcaggggacgt	ttcaggggaag	gtgttccccga	11340
taaaggtgac	atttaagata	tgacctgagg	gagggagccg	tgtggctatt	tgaagggaaga	11400
gagatccagg	tggggagaga	ataacaggca	taaaagcctt	cgagcaggag	agtgtgcaga	11460
attccaggag	ccacaaggag	ctcagtggtg	ctgaagcagg	gtgaacgggt	gacaggctcag	11520
accttgaggg	ccttgaggac	caacagggaag	actttggctt	ttgccagtca	ttgttgctca	11580
tgtgtctact	cctagctctt	tgggaggctg	aagcgggagg	atcacttgag	cccaggagtt	11640
gtcccagcta	attgggaggc	ccagatggga	ggtttgtttg	agctggggag	ttcgagggtt	11700
cagtgaagta	tgattgtccc	actgtactcc	atcctggcaa	cagagtgaag	ccctgtctga	11760
aaagaataat	aataaaatag	gccaggcatc	tgggattata	cctgtaattc	tagcaccacg	11820
ggaggctgag	gtgggtggat	ctactgagct	caggagtgtg	agaccagctt	gggcaacatg	11880
gtgaaaccca	gtctctacaa	aaaattagct	gggggtgggtg	gtacacgtct	gtaatccag	11940
ctacttgggg	gctgaggaag	gaggattgct	tgagcccagg	tggcagagggt	tgacgtgagc	12000
cgagatcatg	ccactgcact	ccagcctggg	tgacaaagtg	agaccctgtc	tcaataaaat	12060
aaaataaaag	aagttctgca	gtaggactgt	tcattgttag	aagaaaacat	ctttttcata	12120
tttttattaa	aataaaataa	aagaagttaa	aacgttccca	caggccccct	aaagtcttgt	12180
gagttctggc	attgtgggtc	acacatcaga	tgcccgaagt	ggccctgggtc	cgcagcagag	12240
gagggctttg	atgggactta	gggtatcaca	ggtgtgtctt	ggctgttgtg	gggaacagac	12300
tgtaggcagc	cagtgtggaa	gtgcagggac	ctggaagggg	ttgactgcac	tggccctgga	12360
aggccctggt	aagaggtggt	gaggttgaaa	ataaggtttg	gggggcccgg	cgcggtggct	12420
cacacctgta	atcccagcac	tttgggaggc	cgaggcaggc	agatcacgag	gtcaggagat	12480
ggagaccatc	ctggctaaca	cggtgaaacc	ctgactctac	aaaaatacaa	aaaatttagc	12540
caggcgtggt	ggcgagcatc	tgtagtccca	gttactcggt	aggctgaggc	aggagaattg	12600
cgtgaacccg	gaaggcggag	cttgacgtga	cctgagatgg	cgcactgca	ttccagcctg	12660
ggcaacagag	tgagactccg	tctcaaaaaa	aaaaaaaaga	aaaaaaaaga	aaaaaagaaa	12720
aggctggggg	gggcacgttg	gctcatgcct	gtaatccag	gactttggga	ggctgagggt	12780
ggcaggtcac	ctgaggtcag	gagtttgaga	ccagcctggc	caacacagtg	aaacctcgct	12840
tgtaccaaaa	atacaaaaat	taactgggag	tgggtgtaca	cacttgtagt	cctagctact	12900
cgggagggag	aggcaggaga	atcacttgaa	cccaggagggt	ggaggttgca	gtgagccgag	12960
atcatgccac	tgcactccag	cctgggggac	agagcaagac	tctgtctcaa	aagcaaaaaa	13020
aaaaaaaatc	aggttgaatg	gctgggtgtg	gtggactgct	tgagcccagg	agttggacac	13080
tagccccagg	caacatagtg	ggacccccat	ctctagaaaa	caaatttaaa	tttttttttt	13140
tttaatttag	tagagatgga	gtttcactat	ggtggccagg	ctggtatcaa	actcctcacc	13200

tcaggttatc	cacccaactt	ggtctcccaa	agttctggga	ttacaggtgt	gagccaccac	13260
gctcggccct	aaaaaaat	taaattgaga	aaaaaaggg	ccaggcgtgt	tggctcatgc	13320
ctgtaatccc	agcacttttg	gaggctgagg	gggggggtgga	tcatgaggtc	aggagttcga	13380
gaccagcatg	gccaatattg	tgaaaccttg	tctctaataa	aaatacaaaa	attagccagg	13440
tgtggtggca	tgtgcctgta	gtcccagcta	ttcaggaggc	tgagtcagga	gaattgcttg	13500
aacccgggag	gcggagggtg	cagtgagcca	agatcacgcc	actttctgca	ctccagcctg	13560
ggcgatagag	cgagactcag	tctcaaaaaa	aaaaaaaaaa	caaaaaaccc	aggccaggtg	13620
cagtggctca	cgctgtaaat	cccagccctt	tgggaggcca	aggcgggtgg	attacctgag	13680
gtcaggagtt	ggagaccagc	ctgaccaaca	tggcgaaacc	ccgtctctac	taaaaataca	13740
aaaattagcc	aggcatgggtg	gcatgtgcct	gtaatcccag	ctaccagga	ggctgaggca	13800
ggagaattgc	tggaaaccag	gggcagaggc	tgtagttagc	agagattgcg	cccctgcact	13860
ccagcctggg	cgacacagca	agtttctgtc	tcaaaaaaaa	aaaataaaaa	tccggctggg	13920
cacagtggct	tatgtctgta	atcctagtag	tttgggaggc	caaggtgagc	agatcacttg	13980
agttcagggg	tttgagacca	gcctggccaa	catggtgaaa	ccctgtctct	actaaaaata	14040
tgaaaattag	ccaggcgggg	tgggtggcac	ctgtaatccc	agctacttgg	atagctgagg	14100
cacgagaatc	acttgaaccc	gggaggtggg	gggtgcagtg	agccaagatt	gcaccactgt	14160
actctagcct	gggctacaga	gtgagactca	gtctcaaaaa	aaaaaaaaaga	aaaaagaaaa	14220
attaaaaaaa	gaaaaacac	acacatacac	acacaaaccc	atctgtggac	ccttttctgc	14280
ccagcacatc	cggccaacgt	ttgatcctga	cacagggtcg	ttgatggaga	ttatgaacat	14340
gaatcagcaa	ctcctgctgc	ctgttcgcca	gaccttcttc	tggtaaggga	agatcaccag	14400
gcctgagggg	ggggtggtgg	tgctcggcat	ggagctaggg	ccccttacct	gactctcacc	14460
tgcccaact	ccaggtacaa	cgccagtata	ggtgacaacg	aaagtgacca	ggcctcaggt	14520
gcctacatct	tcagacccaa	ccaacagaaa	ccgctgcctg	tgagccgctg	ggctcagatc	14580
cacctgggtga	aggtcaggga	ctaggaatga	tgagtgggca	gttgggaatg	gggaagttat	14640
ggagcccaag	aggggtggtg	gcatgtgtga	gagtgggggt	aggggaggat	ttacttttcc	14700
ttcagatcag	tgggctaaga	cccacagatc	agcgggggaa	atatttgagg	gtccttccat	14760
agaattgata	ttcatagctg	gtcgtatgag	agtctcccca	taggacacat	catacaaagc	14820
cattcacatc	tgctgtggac	gtttacatac	ttagttttgg	aaattggggg	tggggcattc	14880
ccacttggcc	catgaatcag	gagagccaaa	tatcactgct	tgaagaattc	accaaagtct	14940
gtagtaagag	gagcttctat	ctggagtga	tatttgagag	tccacccttg	gattgattgg	15000
gtttgggtga	gtctcagggt	gaatgcctat	gggtgcactc	ggctaggaac	agtgggttcc	15060
cagggcctct	cattgatggt	tgactttcat	tgatgacaaa	actcacattt	gtccacattc	15120
aagagcctcg	cgtttcatgt	gagtcccttt	gagatgaatg	tctgcatatc	tgtatatagt	15180
tttgctgtt	ctaacagagt	tacccaaatt	aactgtgact	agaataagat	agaagattat	15240
tttcttctaa	caaaaagtct	ggctgttagt	ccagagaaa	tggggtgggt	ccataatcac	15300
ccaggacctc	ctcttctatc	ttgttgcctc	gccttcccca	atattcagtt	tccacctcat	15360
ggtccaagat	agctgctgaa	gctccagccg	ccacatttgt	gtttgagtca	gtagcagagg	15420
gacaggggca	aggaacattg	ttgacaccac	ttggatcact	ttctatgggg	caaactggtc	15480
actcagctac	ttaggcctc	agggagact	ggacaatata	gtctttatcc	caggtagcca	15540
tgtgccaagc	tagaatccta	ttctatgggg	caatggtgaa	caggaggcgt	ttatgccacg	15600
ctcaagagtg	atgtggtgaa	ccagatgcag	tggctcatgc	ctgtaatcac	agcacttttg	15660
gagactgaag	caggaggatc	gctgagcata	ggaagtcaag	accagggtgg	agcatttgct	15720
gattaggtgc	ctacatagtg	atgcctgtc	tcaaaaaaaa	aaaaaaaaaa	agaggccggg	15780
tgcagtggct	cacgcctgta	atcccagcac	tttgcgaggc	agaggcaggc	agatcatctg	15840
aggtcaggag	ttcaagacaa	gtctggccaa	catggataga	aaccccgctc	ctactaaaaa	15900
tacaaaaatt	agccaggggg	ggtggcagg	acctgcaatc	cctctactcg	ggaggctgag	15960
gcaggagaat	tgcttgaacc	caggaggcgg	aggttgacgt	gaggcaagat	tgtgccactg	16020
cactccatcc	tgggcaacaa	gagcaaaact	ctgtctcaaa	aaaaaaaaaa	gaaaaaagaa	16080
ttatgtgggc	caggcgcggt	ggctcacgcc	tgtaatccca	gcactttggg	aggccgaggc	16140
gggctgatca	cgaggtcagg	agatcgagac	caccttgcct	aacacgggtg	aaccccatct	16200
ctactaaaaa	tacaaaaaat	tagccgggtg	tgggtggcgg	tgccgtgtag	cccagctact	16260
cgggaggtcg	aggcaggaga	atggtgtgaa	cccgggaggc	ggagcttgca	gtgagccgag	16320
atcgcgccac	tgactcccg	cctgggcaaa	agagcgagac	tccgtctcaa	aaaaaaaaaa	16380
aaaaaaagaa	ttatgtggcg	gtgactgaag	gttgaccttg	atgtaggcct	taatgggggt	16440
tatggccagg	gttgggggac	attttagtag	ctcacctctg	ctcagggtaca	gactgacatc	16500
cacctcacc	gtgtgcccg	agacaccctt	ggtgcaggag	gtgcaccaga	acttctcagc	16560
ttggtgttcc	cagggtggtc	gcctgtaccc	aggacagcgg	cacctggagc	tagagtggtc	16620
gggtgggccc	atacctgtgg	ggtgagtgcc	acaggctggg	agaggggtgt	ggaagcaagg	16680
gcagaggggt	ttatccaagg	ctcacaacct	tgcacatcca	ttgggtacag	cgacacctgg	16740
gggaaggagg	tcacagccg	ttttgacaca	ccgctggaga	caaagggacg	cttctacaca	16800
gacagcaatg	gccgggagat	cctggagagg	aggtgggggg	tgactgagag	cactgagggg	16860

gtggtctgtg	gtgtgttggg	gccaggggt	ggtgagggaa	atttgctgat	tacatgagt	16920
tgggagacag	aggacgaagg	gagagtgaag	ggcgggggag	ccaggcaggg	tgcagtggct	16980
cacgcctgta	atcccagcac	tttgggaagc	cgaggcgggc	agatcacaag	gtcaggagat	17040
cgagactatc	ctggctaaca	tggtgaaacc	ccgtctctac	taaaaataca	aaaaaatcag	17100
ccgggtgtgg	tggcgggcac	ctgtagtccc	agctactcgg	gaggctgagg	caggagaatg	17160
gcgtgaagcc	gggaggcgga	gcttgcaagt	agccgagatc	gcgccactgc	actccagcct	17220
gggtgacaga	gcgagactcc	atctcaaaaa	aaaaaaaaaa	aaaaaaagag	ttggggagcc	17280
agatcccaag	cctgatcagc	tcacccccaa	ccccaggcgg	gattatcgac	ccacctggaa	17340
actgaaccag	acggagcccc	tggcagggaa	ctactatcca	gtcaacaccc	ggattttacat	17400
cacggtagct	ctcccccatc	ctgcacctcc	ccacctcgat	agaaagggaa	tcaccctta	17460
tctgcagcat	ctcaaagtct	cctgggggtg	gggttgactg	ccctctactt	tcacccttca	17520
actcccagga	tggaaacatg	cagctgactg	tgctgactga	ccgctcccag	ggggggcaca	17580
gcctgagaga	tggctcgctg	gagctcatgg	tgagtgggtc	agagcccat	ccgagccagg	17640
gtcctcccaa	cctggacccc	tgtctggacct	tgaaggctgt	ttctggccca	gttctctgct	17700
ttcaggcccc	actaagctga	ggactccggt	tctttctttt	cttctctttg	agacggagtt	17760
ttgctcttgt	tgtccaagct	ggagtgcatt	agtactatct	cagctcactg	caacctctgc	17820
ctcctgggtt	caagtgattg	tcctgcctca	gccttccgag	tagctgggct	tacaggcaca	17880
caccatcacg	ccgggctaata	tttgggtatt	ttagtagaga	tgggggttca	ccatgttggc	17940
caggctgggtc	tcgaactcct	tacctcaggt	gatccactca	cctcggcctc	ccaaagtgc	18000
gggattacag	gcgtgaacca	ccgctcccg	ccaaggactc	catttctgtg	tgtggctttt	18060
cctctccggt	ttctcccatc	tcctgccag	gctccctcca	cgtcttgccg	tgccatatcc	18120
aggccccct	gttaggcatt	tacctccttc	cgccctgggt	cccatgccta	cttggatcct	18180
gcctctgctg	gggttgccct	accagacct	caccttcctc	ctcatccgtt	cctcccaccc	18240
tttaattttt	tttgacatc	ccacacgccc	ttaccagtt	tctggcccaa	ggacaccac	18300
aaaccacaga	ctctcacccc	ctcctggcca	ctctccccc	aggtgcaccg	aaggctgctg	18360
aaggacgatg	gacgcggagt	atcggagcca	ctaattggaga	acgggtcggg	ggcgtgggtg	18420
cgaggcgcc	acctgggtgt	gctggacaca	gccaggctg	cagccgccc	acaccggctc	18480
ctggcgagc	aggaggtcct	ggccctcag	gtggtgctgg	ccccgggtgg	cgccgcccgc	18540
tacaatctcg	gggtcctcc	gcgcacgcag	gtgaggggca	gcggggtagg	cagagaggac	18600
cggattgaag	tctaccaggg	agccgggttt	gggtgcggag	tttcttaggc	tcagcgggga	18660
tccatttggc	cataattagc	cccaaacct	cgggccaacc	ccatccccct	ggcagtcctc	18720
gcccagtgcc	agcccagtc	caacccccct	ggactgtgta	gaggcacagc	cctagctcat	18780
gccccctaac	caccaactca	cctccggccc	gcgccatttc	acttttagccc	cgccctctca	18840
ccgccccag	gctctgtcct	gcctcaccca	gccccgccc	ttcagcccc	ccgtaactcc	18900
caaagtctca	ggtcacatca	gttctgtctc	atcgggactc	gaaccctaag	cttgggaccg	18960
acccatctcc	ccattggctc	agtccctccc	gtcacggccc	tgcccgctcc	tctcggctga	19020
gccttgcccc	tctccggcga	aacccgccc	ctacaacctc	gccctgcctc	ctgacctggc	19080
tcggccccgc	ccttctccat	ccaggcccc	ccctctcca	actcagcccc	gccctctctc	19140
ccgcagttct	cagggctcgc	caggacctg	ccgcccctcg	tgcacctgct	cacgctggcc	19200
agctggggcc	ccgaaatggt	gctgctgcgc	ttggagcacc	agtttgccgt	aggagaggat	19260
tccggacgta	acctgagcgc	cccgttacc	ttgaacttga	gggtgagaag	ggcaaaattg	19320
agaaggagat	cggagagagg	caagagagag	ggagagaaga	gaaacctggc	tttgccccaa	19380
ctcatctggg	cccatcccc	tccccgcagg	acctgttctc	caccttcacc	atcacccgcc	19440
tgcaggagac	cacgttggtg	gccaaccagc	tccgcgaggg	agcctccagg	ctcaagtggg	19500
caacaaacac	aggtggggcc	ctggtcaggg	gtagggaagg	ggtggagtct	tacctggggc	19560
cggcaggtgg	gggcaatgtg	tgaggcatgg	gatgttggcc	aggacccaaa	aaggctcatga	19620
gggtatgggg	cagagtccag	accagggtta	ggggcttaaa	ggatctgaaa	tgggtgcggc	19680
aaaccaggaa	tgggtcttga	ggtttgtggg	tgtctgttag	tcccaagaac	aagatttgaa	19740
aatccccatc	catgtctagt	tctgggaggg	gtttcatcac	ccctggggtc	agattgaggg	19800
tacgaggaca	gtggccagat	tgagggtatg	aggacattgg	acctgggggt	ggtattcggg	19860
gccggggaag	caggttaaga	gtctgggatt	gaggccctgg	agacagattc	ggggatatgc	19920
agctgtgtct	agaccagggg	gagggaagcat	cgtgggggtga	gtcagaggaa	gtctgcacct	19980
cctcactcct	ccttccccct	gcacctctcc	aggccccaca	ccccacccaa	ctccgtacca	20040
gctggacccg	gccaacatca	cgctggaacc	catggaaatc	cgcactttcc	tggcctcagt	20100
tcaatggaag	gaggtggatg	gttaggtctg	ctgggatggg	ccctccaagc	ccaagcctcc	20160
tgtccggggg	gcagaccaga	ctctgactct	cctcttgggg	ctgctgccat	taaaacgcta	20220
ctactaagac	tcaggtcgct	ctgtg				20245

<210> 593

<211> 9796

<212> DNA

<213> Homo sapiens

<400> 593

gcctttccag	ggccggggaa	ccccaggagg	aagctgctga	gccatgggag	cctacgcgcg	60
ggcttcgggg	gtctgcgctc	gcggctgcct	ggactcagca	ggcccctgga	ccatgtcccc	120
cgccctgcgg	ccaccgctcc	cgccctctctg	ctttttccctt	ttgttgctgg	cggtgcgcg	180
tgctcggggc	gggggatacg	aggtgagtg	ggcctccgag	ctgaaacgta	caggaggcag	240
agtgaaccc	agaatacagt	ctagaggtgt	gggtgggtct	gtcctgtggg	tgtctagtga	300
atggctgatg	atatgacagt	gtggctctgag	tgcgtgcttt	gtgtcattgc	gaggtctggc	360
tgtgcgcctc	tgagtatagg	actgtgtctg	attgtacctg	cctccgtgtc	tccgggatgc	420
ttgcctagac	tttgtctgca	cttaactgtg	ggattggagg	ggcaggaggt	ggcagggggt	480
gtacagtga	gtgtggggg	gaggtgctgg	ctgagagctg	ggactctgga	gtctgcctga	540
aattccagcc	tagctcttac	acttcctgag	tgtgtgacgt	tgggcaagtc	acctatcctc	600
tctaagcctc	agtgccttca	tctggaaact	ggggataaca	tcaccccacc	tcccacggtg	660
gccgtctgct	gtcggcaaat	gctgaacaaa	catcagctac	ttctattatt	atthttcccg	720
agtgtgaatg	agagctgccc	tgtgggggtg	tgcaaagtgg	agttgtatct	atgagcacia	780
ctatgtatgt	gtgtgtcctg	cctgggaggg	cctggcctcc	tctgcacata	ggcgagatca	840
ggcctctctg	agtcactcac	ctctagatca	agacttactc	tgcagcccc	gacctcgggg	900
gttattgaca	aggtatgtgt	gtttggggtc	cctgtgcaga	catgcccac	agtgcagccg	960
aacatgctga	acgtgcacct	gctgcctcac	acacatgatg	acgtgggctg	gctcaaaacc	1020
gtggaccagt	acttttatgg	aagtgagtag	aggatgggga	ctgggtccctg	ggatcccat	1080
ggtccctgta	atccctctgg	gtcctggaca	ttaggggtgg	gccagtgcta	ccctaataatc	1140
caggggtttg	gtcctctctg	ctaggaataa	cccccttggc	tctgctgttc	cctgagagcc	1200
ttatccctgt	tatccacagt	caagaatgac	atccagcacg	ccgggtgtgca	gtacatcctg	1260
gactcgggta	tctctgcctt	gctggcagat	cccacccgtc	gcttcattta	cgtggagatt	1320
gccttcttct	cccgttgggtg	gcaccagcag	acaaatgcca	cacagggaag	cgtgcgagac	1380
cttgtgcgcc	aggggtgagcc	tacccaagg	aagtgaagg	aggaagccca	gcccagcttc	1440
tgcttctgca	tctctgggtt	ctgagatttg	tcatgccacg	tgcaagctgt	ataacatgcg	1500
tgtcgctccg	cctgcctgga	ctctccattt	ggagacctcc	tatacatccc	acaaagcccc	1560
acctgctgtg	catcctctgg	gaagcctgcc	atgcaggggg	cctctttccc	atatctggga	1620
actatggcct	gggagcgacc	cctcttgtcc	ttccgccaga	aatgtgtaca	caggcaggct	1680
ttcacattcc	cagtatcacc	cacctactc	ccactcctgg	ctctgaccgc	tgacctgac	1740
cttgctgtc	ctggcacagg	gcgcctggag	ttcgccaatg	gtggctgggt	gatgaacgat	1800
gaggcagcca	ccactacgg	tgccatcgtg	gaccagatga	cacttgggct	gcgctttctg	1860
gaggacacat	ttggcaatga	tgggcgaccc	cgtgtggcct	ggcacattga	ccccttcggc	1920
caactctcgg	agcaggcctc	gctgtttgctg	cagggtgcgac	ccgggacctc	tcttgggccc	1980
acttcttcac	tcaactctgg	tcctccctcg	cccagtcata	ccccgccctc	tcctgcaat	2040
ctcacaagga	ccaggcccag	gcctaggcct	gttgaagccc	tgccccctga	gtgagccgta	2100
aagccagtg	cttttgagct	ctggcctcag	ccggctatgc	ccagcccagg	ctgaccacgc	2160
tccggctggc	tccgccctct	cccctaatag	gccccctctg	gtgttctggc	cccacccact	2220
agctcgggtc	ctggctcctc	cctaaaccgg	gtggcaagtg	gatgcctagg	ctgccttaaa	2280
aacaggttca	ttacctgtgc	tcagacccca	tccatcctca	ggctgtggaa	gggggaacct	2340
cattcctgga	gtcaggcctg	ctctgcgctt	tgacagtgtc	ggggaggtga	acctgggttc	2400
tgtgtttgga	cccgcctctc	ccctgctagc	ccaaggtggg	gagttctgaa	acttccccaa	2460
gcttggaat	aagctggagg	cctctctgtt	tcagccctac	gtgtttttgt	ttttgttttt	2520
tgagacaggg	tcttgtgtgc	atccaggctg	gagtgcagtg	gtgcaatcct	aactcactat	2580
agcctcaatc	tcccggattc	aagcgattct	cctgtctcag	ccccctagt	agatgagact	2640
acaagagcgc	accactacgc	ctggctaatt	tttaaatttt	ttgtagacag	tctgcccgtg	2700
ttgtgcaggc	tgggtctcaa	aactcctggg	tttaagtgt	cctcctgttt	tggcctccca	2760
gaaggctggg	atcataggca	agagccacca	catcgacctc	gcactgcttt	ttaacctgtg	2820
ctctgacctg	cccctcccaa	gcagagggga	gtttgggtgg	gagagggctg	ggcactaatt	2880
caactgcct	tttccctcct	catccccaga	tgggcttcga	cggcttcttc	tttgggcgcc	2940
ttgattatca	agataagtgg	gtacggatgc	agaagctgga	gatggagcag	gtgtggcggg	3000
ccagcaccag	cctgaagccc	ccgaccgagg	acctcttcac	tggtaggggg	cttgggtgagg	3060
gcagggccag	ccatgggtgcc	acacactcag	aagggccctg	ggcttgatat	ctgctctgtt	3120
gtcactgtcc	tggaaattcct	atagtctggg	aacaaaggcc	ctgcatttcc	ttttgcattg	3180
ggacacaaat	tctgaagccc	atcctgggtg	ggacatggcc	ggctttgaaa	ccagggaagg	3240
tctgggtgat	ggggcaccac	ttgaacttgg	tgtgacctgc	aggtgtgctt	cccaatgggt	3300
acaacccgac	aaggaatctg	tgtgtggatg	tgtgtgtgtg	cgatcagccg	ctgggtgagg	3360
accctcgcag	ccccgagtag	aacgccaagg	agctggctga	ttacttccta	aatgtggcca	3420
ctgcccagg	aaccttggtg	tccagaacct	tcgagtcagg	tatatataat	acaatgagct	3480

ctttccatgg	tacaggcatc	ccctaacacg	ttctccttat	ttttaatttt	tttgagacag	3540
tcttactctg	tcacccaggc	tggagtgagc	tgggtgcgatc	tcggctcact	gcaacctctg	3600
cctcctgggt	tcaaacaagc	acatccagct	aatttttgta	tttttgact	ggggtctcat	3660
catgttgtcc	aggctgggtc	caaactcctg	agctcaagtg	atctgcttgc	ctcggcctcc	3720
caaagtgcg	ggattacagg	catgagccac	cgcacctggc	ctctattttt	aacattttta	3780
tttattttatt	attatttttt	tttttttgag	acagagtctt	gctctgtcac	ccaggctgga	3840
gtgcagtgcc	atgatctcag	ctcactgcaa	cctccgcctc	ccgggttcaa	gcgattctcc	3900
tgcctcagcc	tcctaagaag	ctgggattag	aggcacctgc	caccacaccc	agctaatttt	3960
tgtattttta	gtagacaggg	tttcgtcatg	ttgaccaggc	tgggtcttgac	ctcagggtgat	4020
ctgcccgcct	caacctccca	aagtgtctgg	attacagggtg	tggggcactg	tgcctagtct	4080
atttttaaca	tttttattga	gaattccttt	tttatttttt	ttagactcac	tctgtcgcct	4140
aggctggagt	cgattggcac	gatctcggct	cactgcaacc	tccactact	gggtccaagc	4200
gattttattc	cctcagcctc	ccgagtagct	gggtttacag	gtgcccacca	ccatgctcgg	4260
ctaagtttta	tgtcttttta	gtagaaaggg	ggtttcacca	tattggccag	gctgggtctcg	4320
aactcctaac	cttttgaccc	acagccttgg	cctctcaaag	tgttgggatt	acaggcgtga	4380
gccaccgcgt	ccagccttta	acatttttat	aattaaaaaa	cattattttt	tcacagagat	4440
aaggctctcac	catgtggccc	aggctgggtc	caaactcctg	aactcaagtg	atcctcctgc	4500
cttggcctcc	caaagtgcata	ggatataggt	gtgagccacc	atgcctggca	taacacgttc	4560
tccttaaaaa	aatttttttt	tcctttcttt	aaaaattgat	ggctgggcat	gggtggctcac	4620
gcctataaat	ccagcatttt	gagaggccga	gtggggcaga	tcacttgaag	tcaggagtct	4680
aagaccagca	tagccaaaat	gacgaaaccc	tgtctctact	aaaaatacaa	aaattagtctg	4740
ggtgtgggtg	cgcacgcctg	taatcccagc	tacttgggag	gctaaggcaa	gagagtcgct	4800
tgaacctggc	aggtggagggt	tgcagtgagc	cgagatcacg	tcacttctact	ctagcttggg	4860
cagcagagtg	aaactctgtc	tcaaaaaaaa	aattgtttta	gattaatttt	tttttttttt	4920
cttgagacag	ggtcttctgt	tgtggccctg	gttgggtctta	aactcctaga	ctcaagcgat	4980
cctcctgcct	cagctcctct	agtagctggg	attacagggtg	tgagcccctg	taatcatgtt	5040
ctcatgcccc	ctggaggaag	atgctattct	attcaccatc	acaatgtccc	cctcctggat	5100
ttatgtgcat	tcctcattag	aagagatagc	ataggctggg	caagagatag	catggcatgg	5160
tgactggatg	ccctcttcta	ggtagtgggt	ccaagagaac	tgtctcaaaa	ctgggtggcta	5220
cttttatctg	tgtccccacg	ctcccaagtg	ccataccccc	acccatgcct	gtgcacccaa	5280
catccttgac	cccatataca	tcaaaacaca	gctatacaca	gggatggccc	aggatcctct	5340
ggcttcagga	ctcccctctt	gcctgcaggg	ccggtattac	cgcaccaacc	acactgtgat	5400
gaccatgggc	ctgcactctc	aatatgagaa	tggcaacatg	tgggttcaaga	accttgacaa	5460
gctcatccgg	ctggtaaatg	cgcaggtcag	tgcgcctacc	ctgtgggtacc	cttgtgcaca	5520
tgtgcgcttg	catccggggg	ccttgggtta	tgtgcatagc	tctcagtgtc	gtctttgttt	5580
tctattgttc	tattgtgggt	attctataac	aaatgaccac	acacttagca	gctcaaaaaca	5640
acagaaatac	attgtcttac	agtctctgtg	gtaagaagtc	cagcatgagg	ccggggcgcaa	5700
tggtcctatg	ctgtaatccc	agcatgttgg	gaggtctgagc	cgggcagatc	acgaggtcag	5760
gaattcgaga	ccagcctgac	caacatgggtg	aaacgctgtc	tctactaaaa	atacagaaat	5820
tagctgggtg	tgatgggtgc	tgcctgtaat	cccagctact	cgggagcctg	aggcagggga	5880
atctcttgaa	tccgggaggc	ggaggttgca	gtgagcggag	attgtaccac	tgcactccag	5940
cctggggcac	agagaaagac	tctgtctcaa	aaaaaaaaaa	aaaaaaaaaa	aatccagcct	6000
gagctctacc	aggctataat	caaggtgttg	gcaaggctgt	gttccttctg	cagtctctag	6060
gagagaatat	aatttccttg	ctttttccaa	catctagaag	ttaccacat	tcaaaatcta	6120
ttcttggctc	catcttcaaa	gccagccaca	tagcatcttt	ctgacctgt	ttctgtaatc	6180
acatcccttt	ctctcattct	cacctcttct	gcctctctct	tccacatttt	atttatttac	6240
ttagagacgg	agtctcgtct	tgtcgcctag	gctggagtgc	agtggcgtgc	tctcggctca	6300
ctgcaacctc	cgcctcctgg	gttcaagtga	ttcttctgtc	tcagcctccc	aagtagctgg	6360
gactacagtc	gcgtgccacc	acgccagct	aatttttgta	tttttagtag	acagggtttc	6420
accatgttgg	ccaggatggt	ctcgatttct	tgcacctgtg	atccaccccg	ctcggcctcc	6480
caagggtgctg	ggattacaga	tgtgagccac	tgtgtggcct	aatttcccta	ctttaagttt	6540
ggctgatgaa	caacctcaat	tccatctgca	accttaattc	cccttttgcc	atgtaattcta	6600
atgtggtaat	agggtctggg	gatcaggaca	tggacacttt	tgggcagtta	tcattttacc	6660
caacacagat	gtgttagtgt	tttgacttaa	gtggcctgtg	gctgtggctg	tgtgcacagt	6720
cagtcactct	catcagcaca	gaaacttgct	tccctctctc	catctcagac	accccttccc	6780
atcaatcttg	tcctcactac	ggtgcaatct	ccattccac	cttccactcg	ctcccagcac	6840
tgtattttca	ccaaaacagc	tcttttatgt	catttatatt	tatttatatt	ttctttttta	6900
aattttattt	atttatattt	ttattgagac	aagagtcttg	ctttgtcacc	caggctggag	6960
tgcagtggca	tgtacttgcc	ctatggcaac	ctctgcctcc	tgggttctag	tgattctcct	7020
gcctcagcct	cccaagtagc	tgggactaca	ggcatgtgcc	accaaccctg	gctaattttt	7080
gtatttttag	tagaggcagg	gtttcactat	gttggccagg	ctggtctcaa	aactcctgac	7140

ctcaggtgat	ccgtccgcct	tggcctccca	aagtgttggg	attgtaatct	gaggtgggag	7200
gatcacttga	agacaggagt	tggagaccag	cctggccaac	atggtgaaac	cttgtctcta	7260
ctaaaaatac	tacaaattag	gtgggctgta	tggcactcat	ctgtaagacc	agctactcgg	7320
caggctgagg	caggagaatc	gctggaacct	gggaggcgga	gtttgcagcc	agctgagatc	7380
gtgccactgc	actccagctt	gggcgacaga	gtcagactca	gtctcaaaaa	aaaaaaaaaa	7440
aaaaaaagtt	tattgagcac	ctactgtgta	cattggggga	cacagctcgt	gcaaaacaaa	7500
catccttttc	ctcacatagg	tcactttctt	gttcctccac	cttgtctcagg	tgaaagtgea	7560
cctccattca	ttataaaaat	tgtgtctagg	ccgggacacg	tggctcatgc	ctgtaatccc	7620
agcacttttg	gaggtctagg	cgggctgac	atgaggtcag	gagatcgaga	ccatcctggc	7680
taacacgggtg	aaactccgtc	tctactaaaa	aatgcaaaaa	attagccggg	tgtggtggcg	7740
ggcacctgta	gtcccaggta	ctcatgaggc	tgaggctgga	gaatggcgtg	aaccacaagag	7800
gtggagcttg	agattgagcc	actgcactac	agcctgggca	acaaagtaag		7860
actccgtccc	aaaaaaaaaa	agtgtgtgtt	tttggttaaca	atctgacagt	cctgcaaac	7920
gattattcct	gccctataat	gtcacactta	gtttttccac	aaaagttttt	aataataaag	7980
ttggaattat	tgtaaaagtt	tagtaaaatt	tcaggtttat	tcttgcatct	ctgaaatcct	8040
tttaaaaaag	gctagtggtc	atgtttgact	tcagccaaaa	ttcattttca	caccacaacca	8100
ttggcttgca	cgccaaatat	gtatttagag	aaactgaacc	tatgggatgc	atgaatgtgc	8160
acacatgtgt	ggaagtgtgg	gccccaggga	aggtgcggac	tcccaggggc	tactccgtc	8220
gcctccccc	cagcaggga	aaaggagaca	gtgtccatgt	tctctactcc	accccgctt	8280
gttacctctg	ggagctgaac	aaggccaacc	tcacctggta	tttggggaaa	ctggggagct	8340
tggggggggt	ggcatgcccc	gtgggtcatg	accctgccct	caatgcccct	gccgctgtag	8400
gtcagtgaag	catgacgact	tcttccctta	cgcggatggc	ccccaccagt	tctggaccgg	8460
ttacttttcc	agtgcggcgg	ccctcaaacg	ctacgagcgc	ctcagctaca	acttcctgca	8520
ggtgggtagg	agccgggcta	gagggggcat	gcagccccga	ggccccgacag	gctgggcgcc	8580
ccaacatacc	cctctgcctc	caggtgtgca	accagctgga	ggcgtgtgtg	ggcctggcgg	8640
ccaacgtggg	accctatggc	tccggagaca	gtgcaccct	cagtaagtgt	cgggcccaag	8700
aggggaagag	gtttgcggct	gaagtgggaa	accaccctta	ggccgcccc	ctcagatttc	8760
ttcttttttt	tttttttttt	tttttttttt	gagacggagt	ctcgatttgt	ctcccaggct	8820
ggagtgcagt	ggtgcgatct	cggctcactg	caagctccac	ctcccgtgtt	cacgccattc	8880
tcctgactca	gcctcccag	tagctgggac	tacaggcgcc	caccaccacg	cccggetaat	8940
tttttgtatt	tttagtagag	acgggggttt	accatgttag	ccaggatggt	ctcgatctga	9000
cctctgtagc	cgccgcctc	ggtctctcaa	agtgtggga	ttacaggcgt	gagccaccgc	9060
ccccagccgt	ccctgagttc	cttcttaaa	cctctaagaa	tcctgcccgc	cagcaccgga	9120
cctttcgctt	ccccttgggg	tctcagctga	gtcccacaga	acctcaccgg	actcattgtc	9180
tatgagcaga	tgaggcgatg	gctgtgctcc	agcatcacga	cgccgtcagc	ggcacctccc	9240
gccagcacgt	ggccaacgac	tacgcgcgcc	agcttgccgg	aggctggggg	ccttgcgagg	9300
tgcgcggggc	gagacttggg	agacacgggg	gtggagacag	gaagggggcg	ggccaggggc	9360
tgggaaaggg	gacagagaca	ggtgtgaggg	gtagccgaga	gccctgtggc	ggggctacaa	9420
gggctcgtgg	gggcggggct	tgtaggaggg	ggggaaagat	acaggaacgg	ggcggggctt	9480
tggagggggg	aaggaggcgg	ggcgtgggca	agaggaggcg	gagacagcta	tgggggtatag	9540
tcaagggcag	caggggtggg	ctagaagggg	ttttggggcg	actcttgagg	gaggcgggac	9600
agagaccgga	acggggcggg	gcctgaggag	aggggaggag	tcaggcctgg	cgctcctgaac	9660
ccaccggtcc	ctttgcgctc	ttccgcaggt	tcttctgagc	aacgcgctgg	cgcggtctcag	9720
aggcttcaaa	gatcacttca	ccttttgcca	acagctaaac	atcagcatct	gcccgtctcag	9780
ccagacggcg	gcgcg					9796

<210> 594

<211> 3844

<212> DNA

<213> Homo sapiens

<400> 594

tcattgcctgt	aatcccagca	ttttgggagg	ccgaggcggg	cagatcacaa	ggtcaggaga	60
tcaagaccat	cctggctaac	acggtgaaac	cctgtctcta	tcttagtaat	actttattaa	120
ttagtctggg	cgtgtggcgg	gcgcctgtag	tcccagctac	ttgggaggct	gaggcaggag	180
actggcgtga	acccgggagg	tggagcttgt	agttagccga	aatcacacca	ctacactcca	240
gcctgggcga	cagagcaaga	ctccgtctca	aaaaaaaaaa	aaaaaaaaaa	aaagctctct	300
gatttttagct	gttaggtggg	agatgggttg	gaggatacca	aagccagctt	gcaggctatg	360
gggataaaga	aaacacctgg	atttcggacc	tactttatag	gtagagggtg	gcagacatgc	420
tgagaaggat	ggatgtgggg	tgtgagaaaa	ggggagacag	caagctgcgc	tcctcatttt	480
taatttttat	ttatctattt	ttgagacgga	gtttcgctct	gttgcccagg	ctggagtga	540

gtggcaccat	ctcagctcac	tgcaacctcc	acctcccggg	ttcaagtgat	tctcctgcct	600
cagcctcctg	agtagctggg	attatgggtg	tgccgccacca	caccgggcta	atTTTTgtat	660
TTTTtagtag	agacgggggt	tcgccatggt	gtccaggctg	gtctctaact	cctaacctca	720
ggtgatctgc	cctccttgge	atcccaaagt	gctgggatta	caggtgtgag	ccaccgcgcc	780
cagccccaat	ccctattttt	cagtctagt	gatgagtga	gggtggggcc	gtttgctgag	840
atgcagaaag	atcagggata	ggtggagagg	gagctgaggg	ggcaactttg	aggtccaagc	900
gaggatgtca	aggaggatgt	ctgtctcctc	caacaaggta	ggctcattcc	agcctcacgg	960
cttttctgt	tctgtcttcc	catgtgcaga	aatggcctct	ctgcatcttc	acatacgggg	1020
atTTTctcag	ccttctgggt	ttgggtcaaa	tctcacctcc	ttggcgtcct	tcacccatcc	1080
ctccaactaa	aatcccgaac	tcctccacct	aaagactcaa	attatcctgt	ttaaatcctg	1140
attgcgtcgg	gcgcgggtgg	tcacacctgt	aatcccagca	ctttgggagg	ccgaggcagg	1200
cagatccact	gcgtcagga	gttcgagact	agcctgacca	acatagtga	accccatctc	1260
tactaaaaat	acaagaatta	gccgggcgtg	atggctcatg	cctgtaatcc	cagctactcg	1320
ggaggctgag	gcaggagaat	tgcttgaaac	tgaggaggcag	aggttgcgat	gagtggagat	1380
cgcgccattg	cactccagcc	tgggcaacaa	gagcgaaact	ctgtctccaa	aaaaaacaaa	1440
aaacaaaaaa	ggcctgatag	cactcaccac	tattgttaac	tttctatctt	cccaatcaga	1500
ttgtgggctc	cagtagggca	gggtccacat	cttggctctg	ttcaccacta	aatccttagt	1560
gcctagcacg	gagccacca	tagagaatag	actacatgaa	ttgtagagt	agtgaataat	1620
cctgttgccc	gatgcactg	ttaggagggt	gtgtttgaga	tacagatgac	accagggtc	1680
tcacattctt	gcaggaggga	aagagacgtc	agccctgggt	cccagaagag	gccactgacc	1740
cagtgggagt	tcagggaagg	cttcccagag	gaggtggagg	tgacagctgc	agctataagg	1800
gaaggagaa	cagagcgta	tgacagcatg	gaaggctttg	gagacttgtg	agggcacgaa	1860
ccgggctcac	tatcccat	gacaaaagt	gctgaggaag	gatgaaactg	tgtctaactc	1920
tgcttggtga	ccgaaatctt	gtccatgggt	gacgcttaag	aagtgacct	cggcggggcg	1980
cagtggctca	gcctgtaat	cctggcactt	tgggaggcca	agggcgggcg	gtcacagtt	2040
caggagatcg	agaccatcct	ggctaacacg	gtgaaacccc	atctctacta	aaaacagaaa	2100
aaattagccg	ggtgtggtgg	cgggcacctg	tagtcccagt	tactcgggag	gctgaggcag	2160
gagaatggca	tgaacctggg	aggcagagct	tgacgtgagc	cgagattgcg	ccactgcact	2220
ccagcctggg	cgacagagcg	agactctgtc	tcaaaaaaaa	aaaaaaaaaa	aaaagtgacc	2280
ctcataaaaa	aattagctgg	gcacgatggt	gcacactagt	cggaatgctg	gggtgggagg	2340
atgacctgag	tccgggagtc	agaggttgca	gtgggcccag	atcgcgtcac	agcactccag	2400
cctggcgaca	gcgtgagacc	ctatcaaaaa	atagcagcag	gccaggcgcg	gtggctcatg	2460
cctgtaatcc	cagcactttg	ggaggctgag	gcggggcgat	cacgaggtca	ggagatcgag	2520
actaccctgg	ctaacacggg	gaaacccgt	ctctactaaa	aatacaaaat	attagccggg	2580
cgtgggtggc	ggcgctgta	gtcccagtta	ctggggaggc	tgaggcagaa	gaatggcgtg	2640
aacctgggag	gcggagggtg	cagtgcagcc	agatcgtgcc	actgcactcc	agcctgggag	2700
acagcgcaag	actctagctc	aaacaaacaa	acaaacaaaa	cagcaacaac	aacaacaaaa	2760
ccatcctccc	ctcccagggg	gacagaacag	aaacgaatgg	gcgagtgccg	ggccaagcag	2820
tggtgtccca	gcagggtggc	ttaaaatagg	aattttgggt	ggggacgggt	gctcacacct	2880
gtaatctcag	cactttggaa	agcccaggcg	ggcggtcacc	tgagggcaga	accagcctcg	2940
ccaacatggt	gaaatgccat	ctctactaaa	aataaaaaat	tagccaggcc	tggtggtggg	3000
tgtctgtaat	cccagcaact	cgggaggctg	aggcaggaga	atcgcttgaa	ccaggggggc	3060
agaggttgca	atgagtcaag	attgcaccac	cgcactccag	cctgcgtaac	aagagcgtgt	3120
aactcttgct	tcaaaaaata	attaaataaa	taaataataa	aaataaaaaa	gaatcttcac	3180
tcattgggaag	tcgagaacac	atgaaaacaa	gtaaaggccg	aagcgacgtg	gctcacgcct	3240
gtaatcccag	cactttggga	ggctgaggcg	ggcggtatac	ctgaggtcgg	aagttcgaga	3300
ccagcctgac	caacagggag	aaaccccgcc	tctactaaaa	atacaaaatt	agccgggcat	3360
ggcggtgcat	gccagtagtc	ccagctactc	gggaggctga	ggcaggagaa	tcgcttgaa	3420
ccggaatgtg	gaggtttgtg	tgagctgaga	tcgggcaatt	gcactccagc	ctgggcaaca	3480
agagcgaaac	cctgtatcaa	aaaaaaaaaa	aagaaaaaaa	aaggaagaaa	aggcctaag	3540
gcgcggggcg	cgggtgggtca	cgcctgtaat	ccagcactt	tgaggaggccg	aggcgggcga	3600
atcacgaggt	caggagatcg	agaccagggt	aaaccccgct	tctactaaaa	atacaaaaaa	3660
attagccggg	cgtgggtggt	ggcgctgta	gtcccagcta	ctcgggaggc	tgaggcagga	3720
gaacagcgtg	aacccggaaa	gcggagctgg	cagtgcagct	agatcgcgcc	actgcactcc	3780
agcctgggtg	acagagcgag	actccgtctc	aaaaaaaaaa	aaaaaaaaaa	aaagaaagaa	3840
aggg						3844

<210> 595

<211> 4126

<212> DNA

<213> Homo sapiens

<400> 595

tgcaagtgcag	agttccttta	tttgggggca	gtgcccaggc	cagttggtgg	aaagaggcag	60
gcatacaacc	cactgtcagg	ctgggggggc	cagcaggggc	gatggaggag	acgaggtggt	120
tgagggattt	tctcagctgc	aggttccagg	cccaggacag	gaggagatgt	caggcatcag	180
acactgagcc	tgcttggtgc	ccgcaggagc	caaaaactgg	cggccagagt	ttttcccgcc	240
ccgccccccc	gcttaccac	aagggtgccc	agaggccacc	ctctgcatcc	tcctttcccc	300
tcaggatgga	gtccaggccc	aaaggggtca	gattctgcag	aggccaaaga	ggacactcag	360
gaaggtgaca	ctgcctcagc	cagccaagga	ccccctgcct	cgagaggagg	cagcagagga	420
agagcaaaca	ctttaacaca	ggctgtggcg	acccgcccc	cagcacacac	ggcacacaga	480
gggctcagg	cacagctccc	cttctcagag	caaaacccaa	ctagacacaa	ggcccagctc	540
ctgccacag	ccacagaaac	gcggggccaca	ggcttgccctg	ggctggcacc	tactggttct	600
cttcctgct	ggcagcatga	agggaaaaga	cacaggaggg	ctcagctggg	ctcctagact	660
ggcccaggct	gagtcctggt	cccagccaac	atctgacaaa	ggaaacaccc	caactggagg	720
agacaaaagg	ggtgtggctc	acatggagca	cgctgtcacc	gtcctgaggg	cttgcccctg	780
gagaagacag	cacctgggt	actgaagggg	aacggtgggg	caggaaccag	gaggtgagct	840
gggactcagg	tacttgctgc	tggccaggta	ctcacagcgt	ctggtagggt	ctgtccttgg	900
ccttgaggaa	gctgcgcaca	aagaaagcca	cgctctgtag	gctcaacacc	agcacgacac	960
ctccgataaa	gtggtgcccc	tcaaatccag	ggctgtgggc	ctcagggaact	ggggggctcc	1020
ctgcaggggt	gaggcagggc	aggggtcata	gcagtcactg	tgaaccagga	tcccagtcct	1080
accctcataa	ctggcacaag	taacctggag	gccccggtcc	tcaatatggg	gtgcttaaac	1140
cctgggtccc	gtttagtcaca	gatcccgcag	gcagttggga	agcgcctggt	gggaggaaca	1200
gtggcagggg	aggggtgggt	gctgtccagc	cctggctctg	ctcctggctt	gctctgtggc	1260
ttttatgcc	cccacattct	ctctgggccc	catgatcaca	tgggtccaat	ggtggcttgg	1320
accagtgcct	gggtctccac	cctccctggg	cctcaccagc	ccaatagggt	gaagacagag	1380
ccagaactca	gacctcccc	tgctcacaat	tcctttcagc	cttggacctc	aggggttcaga	1440
gccaagatgc	agacgatata	gtcccttttc	aggactccta	agccctaaga	cctcagtgtc	1500
acccaatgtc	agagccctca	gagagggag	gagcaggggg	agaagtggag	gccccactg	1560
tcacctgtct	aagtgggtaa	gcgaggactg	gacagtgtgt	gtcaggggga	acatggctga	1620
gggacaggct	tggccaaagt	cacctcacag	gacatagcca	gactcacaca	gggtccccct	1680
accatctcct	ctgcccctta	gaaggtaggg	ctttaggggc	atgggttgcca	ggctatgcct	1740
gggtggctcc	acggtgtgcc	acggtacctg	tcacacctta	gcagggattt	gatttcaggc	1800
cctgggctgg	gtgccagaa	cagggcaggg	ctgggtggatg	gaagatcatt	ctgggacagt	1860
ggaaaggggc	ccagcctgaa	ctgggtctcc	ctcccagaag	gtgtaagggg	tggagaggag	1920
ctgacaatat	gaagggcaaa	cagtgtgtccc	agctcccgtc	cagggagccc	cagagaagga	1980
agctggggga	tgaggagcag	aagaggggag	aaatgagcca	catgaggctg	atccggggct	2040
ccagctgagg	gagctgagcc	atcaataatt	cagcttctga	gatcggtttc	tggctttaat	2100
taaccaaggg	cctcttcagc	catccctgcc	aagtctgggtg	acctccagcc	cctgagaggg	2160
agtgggaagg	aaaggggtgg	attcttgccc	ctactccgcc	aggaaccgcc	cttgtgacct	2220
tctctggggc	tggaggggtg	agtaggcagg	cactgaggat	gtctcctgag	caactcgagc	2280
cacacaccct	cacctccaag	gacaagtccc	gaggagtgc	cttgagttcc	cagaactggc	2340
aatggggagg	agggatggga	actgtcattt	cttgattgcc	ttcagttagt	cagacactga	2400
agtgggcact	gtacagcttc	tcataaaacc	tgcagagcaa	ctctatgaga	aaggcatcat	2460
ccaaccattt	tcacagatgc	ggagacaggg	tccgagggag	aaggcgcagg	gcccaggtca	2520
cagagcatgt	cagtgcctga	gcccagagct	gtcttcccct	gcacctctgc	tcctcccact	2580
gccccgtctc	cagggagtac	tcacctgttg	tgactgtctt	cggttcatag	gtgggggtgg	2640
ggtgagcagc	tgaggagaca	ggtgatccat	agcaaagcag	ccttcccacc	ccctgactcc	2700
catcaagacc	ccagccccca	ctcaccgcta	aacttccgat	tcagatgcag	ccctgtccct	2760
actctagaca	tccaacatac	ttgcaagccc	cacacagttc	cctccaccag	atgtgctctc	2820
tctccatctc	taccttccag	gctcattact	gatgccacct	cctccaggaa	gcactccctc	2880
tcattccctc	tgaacttcca	aagtcccttg	tatgccttaa	actagaagaa	gagctaaccac	2940
tcccatcccc	tccacacacc	tgtactaatt	ttcagatgag	gaaataggca	gagagaggag	3000
gggacttctc	agtgagctaa	aggcagaact	gataccgggc	ccagggtatg	gtgagcaaaa	3060
tccaccgcct	gagagaggct	gtttcctcct	ggggggcagg	ctatggctgg	ggagacccat	3120
gcaacttggc	ttaggtgcaa	gaacccctct	acctggacat	gcctctgagc	ggttgtagat	3180
ggagcaacct	tccttgacca	cctcagattg	ggccacacag	tgctcctggg	agagaagggtg	3240
caggggggag	gttttggggg	agggggcagg	gccttggggg	tcagagctgg	gggcactcaa	3300
tctggggagg	gttcagctcc	atactggctc	cctctggccg	gcactgctcc	cacatgcagc	3360
tggagagatt	gcgcgctctg	tctccctcca	cgcagtgtctc	acagacctcc	agctgttttg	3420
aggccccctg	gaccgcgggc	cagatatcca	ggcggatcag	ggctccccctc	ccaaagcctc	3480
gagctccttt	acctggtagt	gcggtggagt	gggaaggagg	aattcctcga	agccaagctg	3540

tggcaccgc	ccaccctccc	acccaacact	ccggtggccc	tcgcccctct	gcacacatct	3600
gggtctctac	actcaccctt	ggatcccca	gccccagcgc	acacctggag	cttcacacgc	3660
agaggtctac	acacacctag	agcctcccca	cattcaccca	gagcccctcc	ctttgcatac	3720
accgggggtt	cccagattca	gttggagcca	cctccccag	accacctgaa	gtccctagg	3780
ccccacacc	tggggcctat	atttacacac	agggctccac	acagagctgg	agccccctct	3840
cccaccctg	gaggcctgca	cttggccgga	aagccccctc	ccctcaagcc	caggctgctc	3900
ctggggagac	ggctggctga	ggtgcaagct	ccatccgtcc	ccgtcgagcc	cctagccaga	3960
ccctgccgcg	agttaccagc	cacagccagc	tgggcacata	ggaggaggca	gcaacagccg	4020
ccacagagcg	cagtccgcaa	ggcgcggggt	ccgggagcct	ccatgggctc	gcgggggtggg	4080
ggtggccggg	ggcgggtggc	gggatcggtg	gacagctgcc	gggcgc		4126

<210> 596

<211> 341

<212> DNA

<213> Homo sapiens

<400> 596

tttagtagag	atagggtttc	actatgttgg	tctggctggt	ctcaaactcc	tgacctcaag	60
tgatccaccc	gccttggcct	cccaaagtgc	tgggattaca	ggtgtgagcc	actttgcccc	120
gcctaaatth	ttatthtttg	tagagatggg	ttctcactat	actgcccagg	ctgggtctcaa	180
actcctggct	tcaaacaatc	atcccgccctc	agtctcccaa	agtgtctggaa	ttacaggtgt	240
gagccactat	acctcctggc	cagtttttta	ttttttaata	tatacaggggt	ctcactctgt	300
caccagggct	ggagtgcagt	ggcatgatct	tggctcactg	c		341

<210> 597

<211> 142

<212> DNA

<213> Homo sapiens

<400> 597

agggaggagg	gatagcatta	ggagatatac	ctaacgtaaa	tgatgagtta	atgggtgcag	60
cacaccaaca	tggcacatgt	atacatatgt	aacaaacctg	cacattgtgc	acataactc	120
tagaacttag	agtataataa	aa				142

<210> 598

<211> 5889

<212> DNA

<213> Homo sapiens

<400> 598

ggttgetgtc	ttcctcgctc	ctccggccct	tcttccctact	cagcgtctca	cttttggcct	60
atthttctgt	ggatctctgg	cagcctcgct	ttctccctga	cgthttcaggt	gagtgtttct	120
tcattcagta	agcaccatt	gggtacttgc	ttgggtgcctg	attccgctgg	gtgggggttaa	180
gtggcgaggg	gaacgtacag	caggccacct	gcctcccagg	catggcccac	ttcctthttg	240
tacggaattc	cctaaaatga	gaattgcccc	tttcccaaac	taatactact	gtaggtgcag	300
tggttaagat	ggtgaagtct	gcagccatat	tacctgggtt	ccattctctg	ttctgccatt	360
taccattgct	gtgaccttgt	aaaagtagct	caatthctgt	ttgtctcaat	ttccttatct	420
gtaaaacaca	gatgatagaa	cttacttcat	agagaggtga	ggagaggatt	aatgagttaa	480
tacacatgct	atacttatga	tagtgthttca	catataagcc	ttataaatag	aacgtcagtg	540
tgtgtthttc	ttgttatcca	tataatthac	ttagttaggtg	acaggctgta	tgtgagttgc	600
ttgggagata	agcatgagta	aatctagtt	cttatgttgg	agaagggtaa	tgtctaaagg	660
agacagacgc	aaacaaaaac	atgtaacagc	tccccattg	gcactctgaag	aagggtgctct	720
gggctgcag	aggagggaca	actatthctg	ccttggggag	tgtctccagg	gcccctacca	780
ctcaataatt	tgccccctc	ctctctctct	agcatcatcc	ccagagagcc	acactctgac	840
aggtgagtac	aggccacctc	ttgaagacaa	atgcccacat	cctgtcctgc	ttgtgggtgc	900
cagtgtcacc	atggagcagg	gcagtgcctc	agcatthtga	atgaactggg	aacaagccat	960
gggtthtttc	ttgtcctagg	ctcctgtgta	gggtthttgcg	tgctctgctc	ttttggggca	1020
gagggttggg	ttctcctggc	tttgtthtca	agaccaggac	agcctcctth	tgagaggtgg	1080
ggtcatttgc	thttthtagac	taaagatatc	tttggcattc	tcagagggat	thaaagtgtct	1140
aggaagctgg	tatctgaggc	ctccaggggt	catgtcatgt	ctccccagtg	aggggtgcggg	1200
gtcaggcgcc	cggccgcacc	tgctgagttg	gcccaggttg	tgcagatacc	tggctgagag	1260

ctggctcacc	ttccagattc	acctgcagga	gctgctgcag	tacaagaggc	agaatccagc	1320
tcaggtaacc	tcccctacat	catacaacag	ttcactacac	tgaaggggaa	tagagggtggc	1380
gggggatggg	agtggagtga	tataaactcc	ccgcttggag	accctgaaag	aagaggcctg	1440
ggcgcttctt	tgaggcaaca	ttcacagcta	atccctgggtg	caggaggcag	tctcacctca	1500
ggaaataagc	ttttgatagc	ctgacacttt	ctcctgccaa	ggcagaccag	tgtgaattac	1560
aggtggtggg	cattatgtat	tgccagcttc	ctgaattggt	ggtcttgagc	atcctcttaa	1620
ccaaactgga	ccaccccat	ccttgagtac	atacccatcc	ttctaccagc	tgagcagtag	1680
tttcttacc	agccgagcgg	ggcgcatatc	tcagcgtgat	gttcttagac	ttttgctctt	1740
ctctgcagtt	ctgcgttcga	gtctgctctg	gctgtgctgt	gttggctgtg	ttgggacact	1800
atgttccagg	gattatgatt	tcctacattg	tctgtgagta	gggtctgtcc	ctgccctatt	1860
taaagccctt	tcctttcttc	tttctttgga	ctgaccaga	gggaagacta	tgctctctct	1920
gctcagtttc	ttttgttg	agatctccag	ggatgcttta	gtattagtaa	ctgtggaaga	1980
cttacctggg	gaggagggca	gtggatgtgg	caagaagagg	ttggcacagc	cttgggaaag	2040
gaccttgcc	accttcagca	cttcagttta	gggaccagt	gaatgggggc	tcttaggaaa	2100
ttggcgtagg	gagctcttag	ttcacgttct	taaccatag	tggtgagtat	cctgctgtgg	2160
ccctggtgg	tttatcatga	gctgatccag	aggatgtaca	ctcgccctgga	gcccctgctc	2220
atgcagctgg	actacagcat	gaaggcagaa	gccaatgccc	tgcatcacia	acacgacaag	2280
aggagtaagg	ggctgcccta	agccaggagg	gtgaaagagc	gggaggccct	tggtctgggg	2340
ttcatgagat	gccctggaat	tgagactctt	tcagcttctt	tagctgtgtt	tgctctccct	2400
cccatcatte	atgcttggtc	attgctctac	tactcttgct	tttctagagc	gtcaggggaa	2460
gaatgcaccc	ccaggaggtg	atgagccact	ggcagagaca	gagagtgaag	gcgaggcaga	2520
gctggctggc	ttctccccag	tggtgaggtc	cagggaaagc	gggggtgtca	aatagaaagc	2580
cagaggaaaa	atctttctgc	tttgagctg	ccacctccaa	aggaggtgga	agccagaggt	2640
tttgggagag	gggatgctcc	tgataaattg	gttctcttat	ccccctacat	gtcgtgttca	2700
tcctggttct	cctgccaggt	ggatgtgaag	aaaacagcat	tggccttggc	cattacagac	2760
tcagagctgt	cagatgagga	ggcttctatc	ttggagagt	gtggcttctc	cgtatcccg	2820
gccacaactc	cgcagctgac	tgatgtctcc	gagggatagg	ggagcccttt	gctgccctgc	2880
tccccgccac	aatctttgtg	ttccctacca	tggttactta	ctgtgctctc	tggtccactc	2940
actctctaat	tctctcagct	cctaaaagac	cttaaacacct	aaggcttggc	ccagctttcc	3000
atgtcttgag	ttctcctctt	tgaactcatt	gtctgttgtg	gctaatacaga	ccagcagcag	3060
gccattctct	aattctttgt	tctctgcaca	gattttggacc	agcagagcct	gccaagtga	3120
ccagaggaga	ccctaagccg	ggacctagg	gagggagagg	agggagagct	ggccctccc	3180
gaagacctac	taggccgtcc	tcaagctctg	tcaaggcaag	ccctggactc	ggaggaagag	3240
gaagaggatg	tggcagctaa	ggaaaccttg	ttgcggctct	catccccctt	ccactttgtg	3300
aacacgcact	tcaatggggc	aggttcccc	cagatggagt	gaaatgctcc	cctggaggac	3360
cagtggagac	actgagcccc	gagacagtga	gtgggtggcct	cactgctctg	ccgggcaccc	3420
tgtaacctcc	actttgcctt	gttggaggtg	accagcccc	ctccccctcc	attctccacc	3480
ctgttcccc	ggactcacc	cagccccgc	ctgccccga	ggaagaagag	gcactacca	3540
ctgaggcttg	ttagttgctg	gatcagggg	agctggagca	gctgaatgca	gagctgggct	3600
tggagccaga	gacaccgcca	aaacccccctg	atgctccacc	cctggggccc	gacatccatt	3660
ctctggtaca	gtcagaccaa	gaagctcagg	ccgtggcaga	gccatgagcc	agccgttgag	3720
gaaggagctg	caggcacagt	aggtcttctt	ggctaggagt	gttgctgttt	cctcctttgc	3780
ctaccactct	gggggtgggg	agtgtgtggg	gaagctggct	gtcggatggt	agctattcca	3840
ccctctgctt	gcctgcctgc	ctgctgtcct	gggcatgggt	cagtacctgt	gcctaggatt	3900
ggttttaaat	ttgtaaaata	ttttccattt	gggttagtgg	atgtgaacag	ggctagggaa	3960
gtccttccca	cagcctgcgc	ttgcctccct	gcctcatctc	tattctcatt	ccactatgcc	4020
ccaagccctg	gtggtctggc	cctttctttt	tcctcctatc	ctcagggacc	tgtgtgtctc	4080
tgccctcatg	tcccacttgg	ttgttttagt	gaggcacttt	ataatttttc	tcttgtcttg	4140
tgttcccttc	tgctttatatt	ccctgctgtg	tcctgtcctt	agcagctcaa	ccccatcctt	4200
tgccagctcc	tcctatcccg	tgggcaactg	ccaagcttta	gggaggctcc	tggtctggga	4260
agtaagagat	aaacctgggg	cagtgggtca	ggccagtagt	tacactctta	ggctactgta	4320
gtctgtgtaa	ccttcaactgc	atccttgccc	cattcagccc	ggcctttcat	gatgcaggag	4380
agcagggatc	ccgcagtaca	tggcgccagc	actggagttg	gtgagcatgt	gctctctctt	4440
gagattagga	gcttccctac	tgctcctctg	ggatgaccaa	gtgtagtggg	acccccctact	4500
agggtcagga	agtggacact	aacatctgtg	caggtgttga	cttgaaaaat	aaagtgttga	4560
ttggctagaa	ctgctgcctc	cctgactgtg	agctgccttc	cacaccctgc	actgcactgt	4620
gttctctcct	cacccttaac	ctgcttcact	ccagctgtgt	ctggctgttt	attaccttgt	4680
tgcaaaacag	ggccgaagca	aggattacct	tgacaacctt	agcttctcct	tagccatctt	4740
ccttgacagt	gtgatctgtt	tagtgagatt	tagcatgtgt	gaataaagta	tatgcaggag	4800
gaaattgctt	tgtcttccca	atcggtagaa	attcgggacc	ataaaaattg	tgttttacca	4860
tgtggcctac	aaccttaaca	ctgctttctt	aagaagtctt	cacccatcta	catgctaaca	4920

actcactcag	cctggattta	tctttactgg	ggaagccaaa	caagcaatag	aggaccttta	4980
cctgtggttag	aaatgagttg	gagccaagga	acactgaaga	aatagtatct	taacagttac	5040
tgagtccatt	gtatgtgctt	ggctctgctc	tgagtgatit	atatgtatta	agatttttcc	5100
tcacagggtca	gatataact	gttactaact	tcattttata	gacaggtaa	gcttcctgaa	5160
ggccacaggt	cccagtaaat	tgtggagcca	gaacccaaac	ccaagaagt	ttggcttcag	5220
caaatgcac	agacagcccc	tgtccattaa	tagggcacag	gtagggaagat	gcacaaggat	5280
gtgggaacta	tagagaacca	atctgatgcc	ttggcttaac	aaagagtga	catggcaagc	5340
cttcctcttt	ggggaagaaa	agcccagaa	tgagcagatg	gcctccttta	tgagttcatg	5400
tctccgcct	tcagctggag	gtaccatag	gcgatgctac	ctgtctttct	gctggaggta	5460
ccatatggta	atgctgcctg	gctgtctgct	ggaggtagca	tatggtaag	ctgcctgtct	5520
ttctgagggt	gacttttatg	ccatgtcttt	cctaagtgtg	taagaatttt	tctgtttgct	5580
tcacatttga	ctgagaatca	ttctagggtt	tgattgagcc	cctgtcctgt	gccactaaag	5640
gaactcgaac	ttttcatcac	ttagagattt	cagaggggaa	tggaaaaaca	gttctaata	5700
ataagcaagc	aattcaagaa	aaatagaatt	aatcaggcaa	tgactgcaac	atgtcctatc	5760
tttaatctat	tttcttatta	agcttggaca	ttgacaatag	aaccagaagc	ttgtagctgg	5820
atcaaaatat	tctccatagg	cctggagttt	catgagggtc	tattcttttg	ttgtgtgtgt	5880
tttggtttt						5889

<210> 599

<211> 191

<212> DNA

<213> Homo sapiens

<400> 599

gggcccggga	tggcgctgag	cctgggcctg	ggtctgggtc	tgagcctagg	catgagttag	60
gccaccagt	aggcagagga	ggagaggcca	cgcccgagcg	gtgggacgcc	tggccacgac	120
gctgtggctg	cgctccgcgg	ctgggaggcg	gtgctggcgg	cgccgcagcg	gttgcctggtg	180
tgggagaagc	c					191

<210> 600

<211> 686

<212> DNA

<213> Homo sapiens

<400> 600

gggttttttt	tttttttttt	ttgagacgga	gtcttgttct	gttgcccagg	ctggagtga	60
atggtgcagt	cttggttcac	tgcaacctct	gcctcccagg	ttcaaacaat	tctcctgcct	120
cagccgtcca	agtagctggg	attacagggt	catgccacga	tgctgggcta	ttttttgtat	180
ttttagtaga	ggtgggggtt	caccatgttg	gccagcttgg	tctcgaaact	ctgacctcag	240
gtgattcacc	cacctcgccc	tcccaaagt	ctgggattac	aggtgtgagc	cacggcgccc	300
agcctcatga	gggtctattc	tttacattca	ccatgggtctg	atgggttgcta	catgtttgtc	360
tatgattttt	tttttctatt	atcagggtgtc	ttggccggtt	catgcccac	gatgaaaggg	420
ccagagggtt	tcatatgagt	aaaagaaaa	agcagaaatg	tgaacctac	aattaggcta	480
aacaaaaatc	aactggaaaa	gtacaggctg	agggggagaag	agttggctac	atgtttatgt	540
tagggggagga	gggagtacat	tttagctatg	tattcaaaca	gctaatagtt	taatgttgct	600
gcttataaac	ttaatttttag	gctgcattaa	taaaagtgtg	gtctccaaaa	caagaaatgt	660
gataattcta	gtgtcctgtg	cacgaa				686

<210> 601

<211> 26166

<212> DNA

<213> Homo sapiens

<400> 601

gccacgtctg	caagtcagcg	tttattgctc	aagcgtatta	aacaaaaatg	tagactgaaa	60
gagacagttc	ttttaaaccc	catttttccg	gattttttta	gcgctctaaa	ataagaaaat	120
aagaaagtgc	aagccagcaa	aaacgctcca	agtgccctaat	tctgactctg	aaacttgagc	180
tctctgggtc	gcccccaaga	agacatcagc	ccgcccgagg	tcgtccctgt	ggctcccacc	240
ccattcccag	gagcagaccc	cgccagcctc	aaagctgcag	ggagggtggg	gtggcctgca	300
gacagggtgg	ggtctgcac	cgttaccagt	gacagcagcc	tctcctctcc	cacgggtggc	360
cttgtttggg	gctgtggcca	aagtgtttgc	ccggcccctg	actgtgtcct	tccggagctg	420

ccgaggactg	cagagagggc	ctggccttgc	ccctctagga	gcagctggga	aggtgtcttg	480
cctgcatccc	ccttcaatgg	ttgaaaataa	tgattccact	tgatcatgaa	accatgaagg	540
tatcttggca	gccagagtca	ctcctgttcc	gcagtgaggaa	acctgggagg	gtcctcaaac	600
cccctggcag	ggtctgcagg	ccgccccatc	cagctgcac	tcccaggcct	cctgggtctt	660
tgatcttgat	ggccccaggc	cacagatgca	tctccgggcc	tttccagcag	cccatggggg	720
accagtcaat	acacccccacg	gcggtgaaga	gaaaacgttc	atgtcttctc	agatcagaag	780
gaaagaaaca	aaaccattgt	gaaggaaaac	acctgctgga	aagtaattat	caaagtaaca	840
gcattccagt	ttcacagtcg	ccccaaactca	ctgtggattt	actgccgtca	gctgggagga	900
cccaggcgcc	ctcgggacga	ggagacgcag	ggaaacccac	tcctggccat	ggcactaccc	960
aaagccagt	ttattctcac	acccaactgt	ccctgcagcc	tggcaggtgg	gcagtaccg	1020
cctgggctgt	accctaagac	cccaaaacag	cggagatgga	gaagaccgct	gccctggggc	1080
ttctcaagtg	aggatcaaga	caaagtactt	cgtaggaggt	agaggcgct	gggtgaacct	1140
gtgagaattc	ctgggctctg	acctgatctg	tcctgcattt	tgagtaatgg	gagcaaacac	1200
aggagggagg	ggctcagctt	cccccggtca	ctggggccag	ggagacgtgg	tccagccggt	1260
ttacaagacc	ttggatgcag	ccccaccccc	aagaacactg	cctgtcacag	cagcggccac	1320
gtggcactcc	aagctgggca	tgacagtgcc	cgggacgtgg	gcagcggcca	tgtggcactc	1380
caagctgggc	atgacagtgc	ccgggacgtg	ggcagcggcc	acgtggcact	ccaagctggg	1440
catgacagca	cccaggacgt	gggcccggcca	gtgtggcggt	ggatccctct	agaatgactg	1500
ggtctcaagta	gggagacagg	gcaggcgacc	cggcgtggac	tgggtgtgat	ttcacctggg	1560
agagcagcgg	cagcctgtgt	cgcttgccgc	caggctcttg	aggagggggc	cctgcggctc	1620
ccggggccagg	acagagggcg	ccagccctgc	tctcactgtc	caggaagagc	cgctgggcag	1680
cctgagcctg	gggcaggtgc	accttgccag	gaagtgggta	agatcccact	gggctgactg	1740
agtacccggg	acagacccta	agcgtggagg	gaggaagccc	ggtcagagt	ggcaggagac	1800
gcagggaccc	acagtctggt	caggtccaga	gagcccactc	cagcccaagc	catgagagag	1860
gcaggaaagg	gagctggggc	cagttccagg	gtggggctct	caagagggcg	agccgggggc	1920
ccttcctcgg	cctggggaagt	tgccggccatg	ctcctgctgt	tacgacacgg	gagccactcg	1980
gagctgactg	atctcactga	ggcacagact	agccaacatt	ggcctathtt	aaaattaaac	2040
taccctagga	agtgaaaacc	ccacctgcag	cctgggttgc	cctcacacaa	gggaaaagag	2100
gtgttagaag	cagtagctca	gggcgattag	gggttgtgcy	tttccatgct	tggggccagg	2160
ctggggcgctg	ccacccgggt	tccgcgtctg	ggggctcactg	ggccatttgc	accacgacgg	2220
ctctccaggc	tttctccttg	tcgaactcct	tcagggggct	cctggccacc	tgcaaccgag	2280
acaggaaagg	tgttacttca	ccaggggccac	ctgtgcggcg	ggaaggtgga	cacgccactc	2340
ggccacaggc	agcagacagc	cagcgttcag	aagttttctt	cgaatgtgaa	ggaagtgggg	2400
aaactaacc	ctgggcctct	gtggaaagag	ataaaagcct	tcacttcctc	agtgtcccag	2460
aaacgcctgc	atcccccccc	gcacacacgg	tttctaccga	gcctgggatg	gagcagccct	2520
tcactcgccc	ccttgccctg	gctctggggc	ggggagcggg	gggaggccgc	ccaaggttgg	2580
gcattgtgct	gacggctgag	gaagaaaaca	cttaaggcag	aggtaaccag	atgcctccag	2640
gcaaaaaggga	ggacagcgcc	agccccagct	gtccaccctg	agccccagtt	gtccaccctg	2700
agccccagct	gtccaccctg	agccccagtt	gtccaccctg	agccccagcc	accaccctg	2760
agccccctggg	ccccagccgt	ccaccctaag	ccccagccat	ccaccctgag	ccccagccgt	2820
ccaccctgag	ccccagccgc	ccaccctgag	ccccaacccg	ccaccctgag	ccccagccac	2880
ccaccctgag	ccccagccgt	ccatcctgag	ccccagccgc	ccaccctgag	ccccagccgc	2940
ccaccctgag	ccctggggac	cagcagttct	gggatctggg	gagaacacct	catgctctg	3000
actctggggc	ttgctgggtca	caacagaaac	ccaggcgggt	ctcatttctag	gcccagggac	3060
tgccgtccta	gcagggagac	tgaccacagc	caggaaaaat	ggcagcaaag	caactgagga	3120
ggcagggttaa	gggaacagca	gtaggggagg	tggagggtgg	gggcgacggg	gtcagctgag	3180
aaacgagcca	agggaagag	agcgtcctcc	gggacttagc	gggcactgga	ggctctgcac	3240
caagggttctg	aggccggtgg	tgtgctgaac	acaggagggc	agggtgtgca	gggcaagagc	3300
agcggccgggt	ccgcccaggga	tggcctagag	gtggggcagg	actcagagcc	ccgctgagt	3360
gctgcccagg	tgtttgggca	tcaagggtgac	agtcctagt	gtcactgcac	ctgagggtca	3420
gcgggcagggt	ttgcccagggt	gagcaccacc	aggaccctga	gctcgggtgg	gggaagacgc	3480
tgagcctctg	cctttcagat	gtgggggcag	caagacagta	ggcaggggcc	gggggaacat	3540
tgttcaggca	gtgacagcca	gaagtgtgtg	acaccccagc	tttacggagc	cccatgtgcc	3600
aggctgggtg	ggcattgcct	tccctgcaga	accgcgtccc	caccagagac	cagggaagga	3660
aacttcagga	cctgtggggag	tcttcacaaa	gccctcttct	gtgtctctaa	gagcaaatct	3720
gaaagcatta	agtccagaat	atttcccagg	gatgggtctg	ggtttaccca	ggctttgtgt	3780
ttgtattttt	aaaagacatt	ttacggctgg	gcgcgggtgg	tcacgcctgt	aattccagca	3840
ctttggggagg	caaaggcagg	cggatcatga	ggatcaggat	tcgagaccag	tctaaccac	3900
atagtgaaac	cccatctcta	ctaaaaatag	aaaaattagc	tgggcttggt	ggcgggtgcc	3960
tgtagtccca	gctactcggg	aggctgaggc	aggagaattg	cttgaaccca	ggaggcggag	4020
gttgtgtgta	gccgtgatcg	cgccactgca	ctccagctctg	ggtgacagac	tgagactcct	4080

tctcaaaaaa	aaaaaaaaaa	aagaaaagaa	agacatttta	cttcttcggg	gtttttctgg	4140
ggtgttttta	aaaatacaaa	gtggcacaat	gaatcttcga	gggccacgtc	gtgtggccct	4200
cggaggccct	caccaggaca	ggagccccc	ccgcaggcct	ctcacctccc	cagcgggtgc	4260
tctgtgggc	cactcacctc	cccagcacc	ctgaaaccca	caggcctctc	acctccctgg	4320
ctgagcacc	ctgtgggcca	ctcacctccc	cagtgcctcc	accccacagg	cttctcacct	4380
ccctggctgg	gccccccatg	ggccactcac	ctccccagca	cctgcaccgc	aggccactca	4440
cctccccggc	tgggcacccc	tgtgggtac	tcacctcccc	agcacccctc	ccccctgcag	4500
gccactcacc	tccccggctg	ggcaccctg	tgggccactc	acctccccag	cttcccccca	4560
cccacaggc	ttctcacctc	cctggctggg	cacccccgtg	ggccactcac	ctccccagtg	4620
ccccctcccc	ctgcaggcca	ctcacctccc	cagccaggcg	ctcctgcggy	ccgttctggg	4680
tgtcccagga	tgcaccttgc	agccttgcac	tgaccttgaa	gcgcacgcac	tggatggcgg	4740
tgcccggtgt	tgagccggcc	tgcagcagga	gcactagcag	cagcagcagc	agcagcacat	4800
cgtgagctgg	ctgcaggcgg	aaggaggtgt	gagcagagt	gcccagccgc	cctccagccc	4860
aggagaccaa	agctccctcg	tgcccacggc	cttcacaaag	agcaggtgcc	agggctcgag	4920
tcggagcccc	agtaacccaa	acgcattgct	atttcaacaa	cctgatgata	atcattctag	4980
ctcaattaat	gaggtcaatt	ctgctttaaa	ttccatcagc	ttgtgttcaa	catacaggaa	5040
taaaagtgc	cgagccactg	ccaggccccg	tggacagtgc	tggctgctag	tggctcaagtc	5100
gctccacccc	tcctgctcca	acacgcgcaa	ggctcagtc	cagagccaga	gagaatgtcc	5160
gcgggaggga	gaagcgcgtg	ccgttcctgt	tcacgaggat	cctgagcgga	ggagacaggg	5220
ggcagccgct	ctggggggat	ggggtgcaca	gacccccaac	agcttcaccc	ctgagcacca	5280
gctgctagga	aggaaggggc	aggaggcagc	gcggtgagct	cggcagggaa	gaggatggag	5340
ggagcggccg	aggatgcagg	gggccagaga	gtgaccacgg	agcacccaaa	acctctctgt	5400
cccatggata	gctttcccgt	gttgggtcaa	gaaaaacaaa	gcaactaaat	gttaacacac	5460
aaaagagcca	aacatctatc	caatgtcact	gtacaaaaaa	gtaagagaag	aaacagaacg	5520
aacagctctt	ctcaagttaa	cataaaactt	ttttttgcga	cagtctccct	ctgtcaccca	5580
ggctggcgtg	cagtggcgcg	atctcggctc	gctgcaacct	ctacatccca	ggttcaagcg	5640
attctcctgc	ctcaacctcg	ccagtagctg	ggattacagg	tacccgccac	cacgccccagc	5700
taattttcgt	agttttagta	gagacgggg	ttcaccatgt	tagccaggct	ggtctcctaa	5760
cctcagtgta	tctgcctgct	tcggcctccc	aaactgctgg	gattacaggc	atgtgccact	5820
acgcccgcc	tggattttaa	gtaattatta	gaaagtctgg	tacttgtgtt	cccagctgga	5880
gtttaccctg	gaggatggta	aaggcatggg	ccccatgtgg	tctttgctct	tcggttgttg	5940
agacaccatt	tattgcaaag	cctatgcttt	cctcagctct	aaaaaaaaaa	aatccagagc	6000
cattaagaaa	aatattaatc	aacttaacta	tttaaaaaaa	tagctttcac	ataacaaaaa	6060
tcacaacaag	cagaacaaga	aatagccgcc	aggctgagac	caccatttgt	atcctccatc	6120
acagatggag	ctggtctccc	ccggcaccag	ggttagcgga	aaatggtcag	gagacatgag	6180
cagagtccac	tgaaaaagca	atgcagacgt	cctcatgctt	tgtaaagagt	cctcgtcctc	6240
accacacatt	agacggagg	gctccccacc	gtgtcaccca	actccagcgt	gacaccctct	6300
gtggggggct	gtggagaagt	gagcaccttc	acgccattgg	caggagggaa	ggtggacggc	6360
ccccattgag	gaggtcgccg	agatttatca	gcattgacagc	tgacactacc	ctctaccacc	6420
cagtctctct	cctagctgga	tatcctaaag	atgcgctgag	gattcaaaaag	gaagatgcgt	6480
gcagggtgtt	cacggaggag	ttatttatag	tagcagacgg	ttggaaataa	ctcagtttcc	6540
atcactaggg	actggctggg	ttgaccgggc	agttagggagc	gatgaaggaa	ttcagaagag	6600
ctctgatccc	cttgggtatc	gagaaaacac	caggataaat	tattaagttt	aaaaaaacaa	6660
gcaaggggct	gggcacgggt	gcagaagcct	cctcatccca	gcactttggg	aggccaaggt	6720
gggcggatcg	cttgagccca	ggagctcatg	accagctcag	gcgacagagt	gagaccctgt	6780
ctctgaaaaa	taaaataagt	aaatacataa	ttaaaaagcg	aggtacatgg	ctgggcacag	6840
tggctcacgt	ctgtaatccc	agcacttcgg	gaggccaagg	tgggcggatc	gcttcagccc	6900
aggagctcat	gaccagcccc	ggcaacagag	tgagaccctg	tctctgaaaa	ataaaaataaa	6960
taaatacata	actaaaaagc	gaggtatatg	gctgggcacg	gtggctcacg	tctgtaatcc	7020
tagcactttg	ggaggcccgag	acaggcagat	cacttaaggt	caggagttca	agaccagcct	7080
ggccaacata	gtgaaacctt	gtctctgcta	aaagtacaaa	aattagccgg	gtgtgttggc	7140
atatgcctgt	aatccagat	gctccggagg	ctgaggcagg	agaatcactt	gaaccagga	7200
ggcagaggtt	gcagtgagcc	aagactgtgc	cactgcactc	cagcctggga	gacagagtga	7260
gactctatct	taaaaaaaaa	aaaatggcaa	ggtacagaat	agtgattcta	gtatacaagc	7320
tattttgtaa	gaaagaaaaa	aaaattatca	tctggttgcc	cataagagga	gcaggctcagt	7380
caggcatgag	accacagctt	ttctgagctc	gtcttttata	gtttggcttt	tgaaccacat	7440
aaatatttta	tatattcaaa	aaataccatt	ttaaaaagaa	aaaaagcacc	aagccctaaa	7500
atggaatata	accagaggcc	atataactta	atgggggtatc	gaaccacagag	gataacccca	7560
cacagaaagg	ggccgacttc	gatggcgtgt	ggcgtcccc	tgctagcaga	atgcatgctg	7620
aagataaaaag	ggaagcctca	ggctcactca	ggagatggcc	cctgggtggg	aatattgtct	7680
cttgaatcgc	tgaacaatta	tatgcatatt	gtaagacaac	atgaagtagg	agatatatta	7740

aatgtcacag	gaaacaaaat	aattggagta	ggagtgggtg	aagcaaacac	aagagaagtg	7800
aagaaaaaac	cctgggcccg	gtgttgtagc	tcactcctgt	aatcccagca	cctgtgggag	7860
gccgaggacg	ctatccccct	tcagacagtg	actccatgcc	cccatcagac	agtgactcca	7920
tcccccatca	gacagtgact	ccattacccc	attagacagt	gactccatcc	cccgtcagac	7980
agtgactcca	tcccccgta	gacagtgact	ccatcccccg	tcaggcagtg	actctatccc	8040
ctgtcaggca	gtgactccat	cccccgta	gcagtgactc	catcccccca	tcaggcagtg	8100
actctatccc	ctgtcaggca	gtgactccat	ccccctgtca	ggcagtgact	ccatcccccc	8160
atcaggcagtg	gactccatcc	ccccgtcagg	cagtgtactcc	atcccccgta	aggcagtgac	8220
tccatcccc	atcagtgtg	ccatccccca	tcagacagtg	actccatccc	ccatcagaca	8280
gtgactccat	cccccatcag	gcagtgtacc	catcctccat	cagacagtga	ctccatccat	8340
ccatcagaca	gtgactccat	ccatccatca	gacagtgtg	ccatccccca	tcagacagtg	8400
actccatccc	ccatcagaca	gtgactccat	cccccatcag	acagtgtgact	catcccccca	8460
tcaggcagtg	actccatccc	ccatcagcac	acgtgtgttg	acctggagca	aacagcttaa	8520
tacaggtctt	ctaattgattt	gggtgcaaaa	ccacttatac	tggaaaaaaa	aaaacaaaaa	8580
aacaaaaaaa	cactagggtat	ctaagaaata	catctagcta	cacgtgcctg	agcctcagaa	8640
gtcgtgttgg	agataagctc	ctactgggtc	agctcaaagt	aacaggactt	tgaattctcc	8700
ttaatttcac	ctgttaaact	caatgcagtt	ctgatgcaaa	tccgaaaagc	atgtctcata	8760
aaccaggac	agattctaaa	atgggctcag	ggacagagtg	gggtcccaggt	ccctgtgaag	8820
caggtgttgg	cccagatac	agggcggagt	cgaggccccc	aggccctggg	gccaggctgg	8880
cattggggag	cacgtgtacc	gctgccagg	aacagcggag	gaggtgcctc	ctggagctgt	8940
ccctggagcc	agcgccccca	gagtcacagg	caaagccagc	aagggccagg	ccaacacgca	9000
gagcaccaca	tgtctggggg	gctctgaaat	aaaatacaac	tcacttttat	ggctggcggg	9060
taatccttaa	acatctccac	gattctcatg	atgctgaatg	acagatatcc	agaggctgtg	9120
aacagcagcg	gagacgtgag	gctgcttatg	gcaatcagga	cctccacctg	gaaaaaaagc	9180
gcggtgttga	ggaccacggc	cggagcctgg	gagcccagga	cagcgggctg	ggccagggct	9240
ggggggggcg	gcatggccgg	gcactcatgg	gcatagtccc	aagctgggtc	cctgcagtac	9300
tcctgctgaa	acctctgctt	tttctttttt	ctttttcttt	tttttttttt	ttttttttga	9360
gacaagtctc	gctgtgtcgc	caggctggaa	tgcagtggca	tgatcttggc	tcactgtaac	9420
ctccgcctcc	cgggttcaag	tgattctcct	gcctcagcct	cccagtagc	tgggattaca	9480
ggcgcccgcc	accacaccca	gctaattttt	gtatttttag	tagagaccgt	gttttgccac	9540
gttggtcagg	ctggtcttga	actcctgacc	tcaggtgatc	cacccacctc	ggcctcccaa	9600
agtgtcttga	ttacaggcat	gagccaccgc	gcccggcctg	cctttctttc	ttttttgaga	9660
ggcagcctag	ctgtgtagcc	caggcaggag	tgcggtggca	caatctctga	tcactgcaac	9720
ctctgcctcc	tgggttcaag	caattctccc	gcctcggcct	cttgagttagc	tgggattaca	9780
gacatgcgcc	accacacctg	gctaattgtt	ttgtattttt	agtagagaca	gggtttcacc	9840
atattgtcag	gctgtcttcc	aactcctgac	cttgtgatcc	accacacctg	gcctcccaaa	9900
gtgctgagat	tacaggcatg	agcagcctgc	cttttcatcc	acagcacagt	gccacaagtt	9960
ttgaaatact	taccatctag	gcaaggtggc	tcacatctgt	aatccaagca	ctttgggagg	10020
ccgagggagg	cggatcacct	gaggtcacga	gttcgagacc	agcctggcca	acatgggtga	10080
acccccatct	ctactaaaga	tacaaaaact	aagcgggtgt	gggtggcgcat	gcctgtagt	10140
ccagctactt	gggaggctga	ggcaggagaa	tcgcttgaac	ccgggaggca	gaggttacaa	10200
tgagctgaga	tcgtaccact	gcactccagc	ctgggtgaca	gagcaagact	ctgtctcaaa	10260
caaacaaaac	caagaacaaa	aaaacattta	cctgcaattc	tccactcttg	aaaaaatagc	10320
ccttcgcgat	gggtcacctc	cttactgtct	ctgaagtctg	tccttttaac	ccacccccaa	10380
tcttcctgtt	tgaccatca	agtctcagag	acagccttca	ctcatgccaa	gcattggcag	10440
tcaccttgca	aagcactcag	ggccacatt	ttggcagcag	tcattaacga	tcgaccagtt	10500
caattgtttg	cgggtcagttt	gtggcagttt	cggccggggc	tggtggctca	caccggtaat	10560
cccagcactt	tgggaggttg	aggtgagtg	atcacctgag	gtcaggagtt	cgagaccagc	10620
ctggccaaca	tgggtgaaacc	ccgtctctac	taaaaataca	aaaattagcc	gggcatgggt	10680
gcaggcgctt	ataatcccag	ctactcagga	ggctgaggca	agagaatcac	ttgaacccgg	10740
gaggcggagg	ttgcagttag	ccaagatcgt	gccattgcac	tccagcctgg	gggacaagag	10800
cgagactgca	tctcaaaaaa	gaaaaaaaaa	caatcgacca	gccttaggag	gtgcagatga	10860
tgctcagaca	ctggtctcct	tccaagggtt	aggcacagag	agcgcttcca	gtgtctacac	10920
cacctgttgc	aggtctgcct	gtccctgaga	acagtccctg	ctgagcgggc	cagcctccac	10980
ctcccaaac	cccaccttcc	tcattgtgca	ggccctgcag	cccagtcact	gcgctctctt	11040
gggctggagc	ctggtcacat	ggcaccaagg	gagggctagg	ccaggccctg	gccccgctcg	11100
gtgggtccct	ggcaccagag	gctgaggggt	tcaccaccca	gacacttgct	gggacactct	11160
gctgccacat	gactggcaat	ggcacttgga	aagactaag	agaaaagaaa	aaggaaagat	11220
tttagaggaa	atagtcgaag	aagtcgaatt	ccaaacatgt	gccctccac	cagtgacccc	11280
tccatgcagg	ctgcctggct	ggcttgctgt	ggggggcagg	ggggatgggt	cagtgcccaa	11340
aggcgagct	ggggcaggga	cgggtccgca	gggaagcagg	ggtagcctct	cagaggtttt	11400

gtgtgctctc	tgttcctcaa	ccattggttt	aaaattttta	gcctgtagaa	aagctgcaag	11460
agcagtggag	ggggcatctg	aggcccca	atcaccagag	tccttgacat	tcatatctgt	11520
gctctctcca	gctctcccag	atagcctgat	gcctgaacac	ctgagagtgc	tggctgagcc	11580
cagggcacac	tcttgacac	acccaaagca	ggaccacgct	cgagagactc	cacgtggggc	11640
cgatgtggtc	catgcccaga	ttcttccagt	tgtcctcatc	atgttctttc	ttttaattt	11700
tttaataatt	tttctttctt	cttctccttt	ttttttttaa	gatggagtct	tgctctgtca	11760
cccaggctgg	agtacggtgg	cgcgatcttg	actcactgca	acctccacct	cccaggttca	11820
agcctcctga	gtagctggga	ttataggcac	ccaccactac	accaggctaa	tgtttgtatt	11880
tttagtagag	acgggggtttc	gccttggttg	ccaggctggt	ctcgaactcc	tgacctcagg	11940
tgatccgccc	gcctcggcct	cccaaagtgc	tgggattaca	ggcatgagcc	accgcacctg	12000
gccctgggtc	tgttatttct	agagctgttt	gtttgtttgc	tcctgatccg	gattcggctc	12060
gcattgtgagc	tcgtgactctc	cttgtgggtc	cctgttaatc	ggggagtccc	tcagcctctg	12120
tcacctccgt	tacctggtcg	cttctggggg	gtgcagccca	tcagctgcag	tcgggcctcc	12180
gtgtgggaca	ggatttctct	atgatgagcc	ttggggagcc	tcggaggaga	ctctgcagtg	12240
cccagggtg	tggactgccc	cttctctgat	acgctgactt	gactcactgg	gttaggggga	12300
tctgtagggt	cctctgtttg	atgggcacct	cttctttttt	ataaccaaga	aatgcccttt	12360
tcccaattat	tgtgaggagc	ctgccttagt	tccgcacaat	gtaggcagag	ggaggatgca	12420
tgctcttcat	cctcttctat	tccccgaagg	tgtccagggt	ccagcaccce	agcccgacct	12480
gctggggagg	gggtctgcac	agccaggggc	tgtggtgaga	gggtgggcag	gacagagatg	12540
ggctccgagc	aggggagcct	gggcagcagg	gagaagactg	gggagctgag	gggctgccag	12600
tgcaaaggcc	ccaagccagc	tgctgagggt	gggtgtggcc	tggccaggga	ggctgagggt	12660
tcaatacagg	ggtctctcct	gggcttggtg	cttctgaaag	ggccttctag	ctgtaagcag	12720
cagtgagggc	acaggaaggg	atgggtggctt	cagggtggcc	tattcagggc	cccagtgagc	12780
catgggaggg	cgggagtttc	cccgttcacc	cagcatggcc	actccggccc	ctgccctaga	12840
gggccaggaa	gctcagccat	aggggctggg	gcagctcaat	caagggccct	gccctggaag	12900
ggctccaggc	tgcagcccag	cccccaactc	cagccccag	cacctgcctc	cagccccagg	12960
tgcagggcct	gggccccctc	gccgcaccca	ggccagactc	aggcagggtg	agctgggtcc	13020
ctcaccacgc	atgcctcagc	gctctcctct	cctcctgggg	tctcctgccc	tgaagagagg	13080
gttgggagtg	tgggtggatt	tagggggcgc	cagggggcag	cacctgatgg	gcagggggtg	13140
ctctccggga	agatggagag	agcagagcca	cccccgaggc	aggaggggtc	tgcgggatgg	13200
gaggggcctc	tgtgatgagg	gctgactgca	gggacaggga	agggggtagg	gcaagtgcct	13260
ttcattctca	actttttgga	ggtatgtggt	ctctgtcctc	cctcagcttc	gggatgtaat	13320
ccctgcgttt	cagaccccag	ggtcagttgt	acacacctgc	aggcgctatt	ctctctgtca	13380
cagacccgct	tgggtgggca	cccattgtgag	ttctctgtct	cagtagctgg	gcctggctct	13440
accccttccg	ggggtgtggc	tctatcccag	ctcggtcctg	cctgggtctc	tttccctctc	13500
tgagcgccct	agcagcccac	taggtcgggc	actggtgccc	tgggggcatt	gctctgtgcc	13560
tactcgcccc	cacagggagc	tgaacacag	ctgctgccaa	tgggatgtgt	ccacctggca	13620
ggcggtgggc	ccttctcggc	agtccaccgc	gccacaccgt	tcccgggcag	gcgtggggcc	13680
cttctccgca	gtccaccggg	ccataccatt	cccgggcagg	cgtggggccc	ttctcggcag	13740
tccacctggc	catactgctc	ccaggcaggc	atgggcctcg	gcagcttcag	gaagagcccc	13800
actgtgccc	aggaggagcc	tgtagctgat	gctgggtgct	caccattcct	gctcatgtac	13860
ataagagagc	aggggcaaaa	tctaaaagtc	cacacagcat	gagacaaacc	aggggctggc	13920
cgtcaacacc	ggtgtgcagg	ccactacgcg	gcaagggtgt	gagaacctcg	tggggctctg	13980
gtccggaggc	aggtgggtgg	tggctctggg	tgggctacag	gctgtgaggg	gatctggggg	14040
gtggaggggt	tgctctagac	tcactgttct	gaggggaacac	acctgtaatc	ccagcacttt	14100
tggggggccga	ggcaggcaga	tcacttgagg	tcaggagttc	aagaccagcc	tggccaacat	14160
ggcaaaaccc	ggtctctact	aaaaatacaa	aaaaattagc	tgggcatggt	ggtccacgcc	14220
tgtaatccca	gctacttggg	aggctgagg	gggcaaat	cttgaaccgc	gggaggggca	14280
gaggttgtag	tgaggtgata	ttgagccact	gcactccagc	ctgggtggca	gagtgagact	14340
ccatctcaaa	aaaataaata	aataaaataa	ataaaacaat	gcccattgtat	tgagcatgtg	14400
gcattgtgtca	ggtgctgtgt	gacacatctg	ctgcagtaac	atttaattgta	aagtaataac	14460
agaaatatgc	tgtctgttat	gaaaacacata	gtgtaataata	aatgcattat	atattagaaa	14520
attatataga	ataataaaca	tctacagcct	gacattcata	tgtaaaaaag	attagaataa	14580
taaaaaataat	tggtattttt	ttcaggaaaa	ataatataaa	ataatcacac	aaactaatat	14640
aaaagcagtt	aatactttga	ctcatttaat	ccttaactcc	ccagttcttc	tgaagttggg	14700
ggccagcgag	gacctctgt	ggtgactctc	tgtctgaatg	caccaagact	gagctcgggg	14760
cccagccagc	caggatctga	gcagtgtggc	ccagagcggc	ggcggggcgg	ccagaggggt	14820
tactcacggc	cactaggatc	caaaagaacg	ctcactgagag	gtgtgggcct	gaaactgagt	14880
catccacggt	cagggcaatg	atccccccga	ggacggcaga	gatgcctgcg	attacctcga	14940
cgacctggag	gggacaggac	agcatcggtc	cataaggaag	tggagacacc	cccagattcc	15000
cagaatgcac	tgtgcagaca	tggaccccc	ggagcagggt	ccagtgggct	ggccccagat	15060

ctaaccgtgg	aggagcccac	ctggatggac	ccccagcctc	acctggccca	gacccctct	15120
gcctcagct	gcggttttc	acgtccctcc	tggagtaaaa	tagccaaaga	ggtgtttccc	15180
ccactgctgc	ttttgtccac	agaaactgag	ggtattgacc	tgacagtgg	gagggcagaa	15240
aaccaagacc	ctcagactcc	cttccctgtc	tcacagtgtg	gcaggcggcg	gtgctcagac	15300
cctggacccc	atcgaaggga	ctcgggaaaa	caggcctggg	gcagaagtag	cttcccatag	15360
gacacaccca	cccgtgccat	gtgggtttgc	cattgccacg	gcaacactgg	acgtcaccac	15420
ccctttccgt	ggcaatgatc	caaccacctg	gacgttagca	ccccctttct	agaaatttct	15480
gcataatctg	ccccttaatt	agcatatact	taaaagtggg	tataaatagg	aggcagagct	15540
gtctctgagc	tgtctctcga	ggcacctgcc	ggttggagag	ccctgctata	ctgccactgc	15600
aaacaaagct	gctgtctgtc	acctccagct	cgcccttgaa	ttctttccctg	gacaaagcca	15660
agaaccctgc	tggcctaagc	cctggttgtg	gactcatctg	cccgccacca	tcagggccgc	15720
aaccagaccg	gccagactca	gggagggggc	gcaaccagca	ccgcagact	cagggagggg	15780
ccgcaaccag	caggcccgga	ctcaggggag	ggccgcaacc	agcaccgcca	gactcaggga	15840
gggctgggga	agaaacacac	gcccgaaaac	ctgctcccgt	gaaggatctc	tgtgagtcgc	15900
aaacacagag	ctgtggccag	caggaaagcc	aggcataagg	agtgggccag	caagggcttg	15960
ggggccggaa	gggacctggg	cagccaggcc	ttgcgtccag	aaggcacaaa	actccagatg	16020
cacaaataaa	gctgaattcc	cagccaggca	cggcggctca	tgctgtaat	cctagcactt	16080
tgggagggcg	aggcagacgg	atcgtgaggt	caggagtttg	agtacagcct	ggccaacatg	16140
gtaaaccccg	tctctactaa	aaataacaaa	aattagctgg	gcgtgggtgg	gggcacctgt	16200
aatcccagct	actcgggagg	ctgaggcggg	agaatcgctt	caactcagga	ggcagaggtt	16260
gcagtgaacc	aagatcacac	cactgcactc	tagcctgggc	aacagcagga	ctccatctca	16320
aaaaaaaaagg	aaaaaaaaaa	aagaagcaga	acggaaatgg	aacctaaag	aggactgaaa	16380
tgctaaataa	ggggaagtga	aggcactggg	aaacacacac	agacacagtc	aagcacacag	16440
gaggtgtgcc	cattgttgga	gtaaaaaggg	aaaatgtcac	taaatgtcac	aagctagaca	16500
acaaggccaa	ggcggaggga	agggggacag	accccgcatg	gtctgtttat	caaggagcgt	16560
attagaatat	gaagggcaac	ccccaaaaga	atactgaaaa	atttcccatc	caaaattaga	16620
gggaaaagga	aggacggagc	ctctgccaat	tcaaaagaag	gcagggaagg	agggaaaaag	16680
gcaaaatcag	ggaaaatgga	aaactcaaaa	gatggtaaaa	ataagtagaa	atttatcagt	16740
aataactctc	agaggaaatg	ggctacattc	aaaaagctag	ggagagagaa	tgacaagata	16800
aagaacaaaa	tacagttacg	tgtgtcttat	aacaattata	ccaaagtaca	aggcaagaaa	16860
agttgaaagt	aagaaggaga	aagaggccag	gtgcgggtgg	tcacacctgt	aatcccagca	16920
ctttggaagg	cttgggtggg	tggatcactt	gaggtcagga	gttcgagacc	agcctggcca	16980
acatgccgaa	accctgcctc	tactaaaaat	aaaataatta	gccgggcgtg	gtggcatgtg	17040
cctgtagtc	cagctcctca	ggaggctgag	gcaggagaat	tacttgaacc	tgggaggcag	17100
aggtggcgg	gagctgagat	agcaccactg	cacccagacc	tggctgatgg	agtgagactc	17160
cgtctcaaaa	aaaaaaaaaa	aattcctcgg	ggacaacagt	gtcaactcac	ctacggcagt	17220
aacaaactcc	ccctaaaaat	tacaggacac	cagcagcacc	tttcgcgata	aggaaggtta	17280
ttaccaatga	taccaataac	agactagagt	ctccacagat	gaggcgacg	ccgccatgcg	17340
gtgtagacag	ccaactcttc	gccaactcgg	aatcgaaacg	tgacgtttaa	tccagctca	17400
gtcacccccg	acagagtatg	agagaaaaga	gaaagaagg	aagttttctt	actgagtaag	17460
atttcaggac	ccgagcagga	aatggcactt	cgtccagaat	gttggcgctg	tcagacatgg	17520
agccctacga	agaaacagaa	ctgtcacccc	gggtgcacgg	gcacagggac	tcagcactgc	17580
cgctggcatc	cggccgcctg	gggcagtggg	tcaggtcagc	ctgccgtgta	gatgcgagac	17640
cgcttgggag	gcgcccgtgg	atctttgggc	ttgaggaaat	gttcacacac	attgtccttg	17700
catatgaaaa	ttagcagatg	tgtgtctccc	tgtgtatccc	ctggggacga	gcactggact	17760
gagtcaggct	tagggggagg	ggaggggtaca	gcattctgtc	tcacctccct	gtagccagcg	17820
gccgccaacc	cctcacccag	ctccagagcc	cctcctggcc	ggggtttctg	agaccagga	17880
gagaggggtc	tcatgggaat	gccctggagc	agcccagatc	ggccctccga	gggtgacgct	17940
gagacccacc	tcgctcacc	tgggtgatg	cctctgcacc	ccctgccctg	cggggtcaga	18000
agctgcaccc	accttctttt	tcttgcagtc	ctcctcgctg	gaccgtgcag	cgatgatcac	18060
cgtggccgcc	atgagcagct	ccagcaggag	cagcaggatg	aggttgaagt	tgatctgcca	18120
aggggcacac	accgttcagc	accgggcccg	cctttctcac	gccaccgcgc	ttcagcgtcc	18180
accggaccac	ctcacgggca	ggctgcgcag	gactctcagc	cacggteccc	acttttccca	18240
tccagggcca	gctgtgaggc	actgtgggct	gcacactctc	ctgctcaca	tgggcctttg	18300
gggtctttta	gtttttaaaa	ccattcttag	tgc aaaggct	gtacaaacac	aggccagggc	18360
tggatttggt	cttgggctct	ggtctaccga	ccccattctg	aacgctcctt	gttccacaaa	18420
aagccttcac	ggaatgttta	gagtagcttc	atgcattgatt	gtcaagcact	gagaacataa	18480
ggtttttttg	agggtaatga	aacgactgca	ggccctgacc	gtattggcag	tgacatgaat	18540
ttatatgtgt	gttaatatct	atagaagcat	acatttttaa	aagtcagtg	agctgtctga	18600
caattttttt	tttttttttg	agacggagg	tcgctcttgt	tgcccaggct	ggagagcaaa	18660
tggcgcaatc	tcggctcacc	gcaacctctg	cctcctgggt	tcaaatgatt	gtcctgcctc	18720

agcctcccga	gtaagctggg	gttacaggca	cctaccagca	cgccccgcta	attttgtatt	18780
tttagtagag	aggggtttct	ccatgttggt	caggctggtc	tcgaactcct	gacctcaggt	18840
gttccgccca	cctcggcctc	ccaaagtgt	gagattacag	gcgtgagcca	ccgcgcccgg	18900
cctgacaatt	tttaaaatac	atttaaaaaa	gaaagagtgc	agaaccacat	tcaactaaaa	18960
acagagcctc	gaaatatatg	atgtcataac	agagccacag	gaagatgtag	atatatcagt	19020
agagggtggg	aaggacttga	aacacttttc	ttagaaactg	acagatcagg	cagagggagg	19080
cggctcacgc	ctgtgatccc	agcacttttg	gggaccgagg	cggttggatc	acctgaggtc	19140
aggagtcca	gaccagcctg	accaacatgg	tgaacccct	tgtctactaa	aaatacaaaa	19200
atcagctggg	tacggtggcg	cacgcctgta	atcccagcta	ctcgggaggc	tgagacagga	19260
gaattgcttg	aacccgagag	gcggagggtg	ccgtgagccg	agatggagcc	actgcactcc	19320
agtctgggcg	acagagcgag	actgtctcaa	aaaaaaaaaa	aaatgacaga	tcaaaaagac	19380
aaaagcataa	ggagaactct	aaaattcaga	aaagtgtgac	attaaccttg	tcttttattt	19440
tctgtatttc	tgggtgcttg	acctctggct	ccttcctgat	cctgaagaga	cagctcctcc	19500
cagggccagc	cgacagctac	agtgaagtaac	ttgctctga	gcagttcaga	tacaagccac	19560
tgaccagggg	accacacccc	atctgctctc	cgtcttaata	aagaagcgtc	acaggccggg	19620
cgcggtggct	catacctgta	atcccagcac	tatgggaggc	cgaggtggat	ggatcacctg	19680
aggtcaggag	tacaaggcca	gcctggccaa	catggtgaaa	ccttgtctgt	actaaaaata	19740
caaaaattag	ccgagtgtgg	tggcacacgc	ctgtaatccc	agctactcca	gaggctgagg	19800
caggagaatt	gcttgaaccc	gggaggtaga	ggttgcagtg	agccgagatg	gcgccactac	19860
actccagcct	gggcgacaga	gcgagattcc	ttctcaaaaa	caaaacaaaa	caaaacaaaa	19920
aggcagtgtg	ggtgttccca	ctgggtcctc	ctgtgtctgc	tcatttttcc	tgcccaacga	19980
gagtggccag	gacatactca	agcctcctcc	agctttcccc	aatcatcaag	tgcatctcac	20040
atgtcacaca	aagcaggagg	ccctccttgc	agtatctcgg	atgaggtcct	ggtttctctt	20100
gggatttttg	tctttttttt	tttttttttt	tttttgagac	ggagtcttgc	tctgtcttcc	20160
aggctggagt	gcagtggcgc	catctcggct	cccacaacct	ctgcccccta	caatttcaca	20220
tttttgttta	gaggtgcatt	gaacaactgt	cttacacaga	ttggatgaaa	catagtatta	20280
tgtcactggt	aatttttaag	gactgttggg	aaagacattg	tttaccaata	aatctgtccc	20340
gcagaatcac	gagacttcaa	taaagacaat	tattttcttt	ggatgcataa	atctctcaac	20400
tttagtcaaa	ctcacgagct	gtgaataaca	tttaccacct	atttccagct	caacaaacat	20460
ttgctgacac	cattcgtggg	agtggggctg	tgggtgtcag	gcgtctgcgc	gaagctcgtg	20520
tgaactcacg	tttattgctg	atgggttcag	gactagtttg	catccaaacc	aaattaaaca	20580
cgtagtggct	tggaataaacg	tggaacaaca	caatatctga	aagttgggaa	tctgaaaaac	20640
aaggcaggag	gggttttctc	tctttgaata	ataaaagaaa	aaaggtaaca	gataaaccac	20700
acttcaggcc	attcactaaa	aattatcctg	attaggacat	aatgggtggg	agtcctgcgt	20760
gctcagcccg	ctctccctc	tgtcgggcaa	aggctgggct	gggcaggagc	tttactgtct	20820
ggggggcaac	ctcgggggcc	cctctcgggt	ccacaacgtc	tgtgcgtggg	cacacacaca	20880
agcacacatg	ggcacactgt	ctgtcagccc	ctccggcttt	ctccctggca	gaggctgcct	20940
gcaagctaga	ctcaccacat	tggcgttcct	cctggagacg	gtgaagctca	caattgccga	21000
ggggatgcac	tggaatgaaa	ccggaatccc	atgagcctgc	cgctcacctg	agcaactgag	21060
actctgaaat	actctaact	ttgcgcttcc	agaaggatct	gaatcatatt	cacaaaacag	21120
tgttgccagt	ccatgcaaca	cagtgggttg	gcttgactag	aaggccccca	ggtacttctc	21180
agtttttaatt	ttttcttgag	atggggtctc	actctgttgc	ccaagctgat	cttaactttg	21240
ggctcaaatg	atctgttcac	ctcagcttcc	caaagccctg	cgattacagg	catgagccgc	21300
tgcgcccaac	ccccaggtag	ttcaaaataa	tttattctga	aagaagtttt	tatttttctg	21360
atgtgctaaa	aagatatattg	ttaatgaagg	ctcttctagc	tggataagct	ttgaagccta	21420
gaatgttaact	cacgcaggga	caagacctgg	tctttgtgta	aaattaccca	aaaaaggaaa	21480
aagtatcagc	cgggtgcagt	ggctcacacc	tctagtccca	actactccgg	aggctgagct	21540
gggaggatct	cttgagccca	ggagtccgag	gctgcagtga	gctgtgaata	ctcggtgata	21600
gagttagacc	ttgtctcaaa	aaaagaaaga	aagaaagaaa	gaaagaaaga	aagaaagaaa	21660
gaaagaaaga	ggaggtctgg	tgcagtggct	cacacctgta	atcccagtag	tttgggaggc	21720
tgagcggggt	ggatcagagt	caggagtttg	agaccagcct	ggccaacata	gtgaaacccc	21780
atctctacta	aaaatacaaa	aaaaattagc	tgggcgtggg	ggcgggtgcc	tgtagtccca	21840
gctactcagg	aggctgaggc	aggagaattg	cttgaaccca	ggaggtggag	ggtgcagtga	21900
gcagagacgg	cgccattgca	ctccagcctg	tgtgacagag	caagactccg	tcaaagaaag	21960
aaagaaagaa	aaaaagaaag	aaagaaagag	gaaggaagga	gcaaaggaag	tagcaagact	22020
ctgcatgtga	gggaggcaga	aaggagtccc	acagccttct	tgtcctcagc	cttcttgtcc	22080
ccacaggggc	acaccaaggc	taggagtcca	gggccaggga	gggaggttgg	gacgtcaggg	22140
acagggaggt	ggatggagtc	gggccagccc	aggcctgtgg	cccttgccgt	gcagggccct	22200
gctcctgcag	ccatgggacc	ccgggccctg	agtcgggggt	gcaggccctg	aggggctgag	22260
cacagcagtg	ctgggtgagg	aggcagaaga	agccccgtcg	gggcctgagc	gaggggcaga	22320
gctagggcca	ggacagccag	gctcagctca	gcaccactc	aggtgccacg	agggccccag	22380

gtagagaaga	aaggccgggg	gcagggccga	gtggggccaa	ggctgggchg	gggtgggcac	22440
ttgcccatat	ccggcagccg	ctgaggctga	aggggacacag	ctcacagctc	cactgggaca	22500
aggggcgctc	ccatgggtgag	gataaaggcc	acggagaagc	ttccagagag	ggcagcagag	22560
tgggacgggt	cacctgcccc	aaagggtttt	gttctaaggg	agcagagacc	caggacagca	22620
cggggcgggg	catccacttt	gtttttaaga	catttcgggg	gcgctgctgg	ggacagtcac	22680
caacagtgtc	cctagagaaa	gggcaggggc	cagagacca	gcaggcatgt	ggaagcgaga	22740
ggaggggaga	gctcggggacc	agctgaagca	ggaggggct	gggggtccg	gcttgcgggc	22800
cagaggggca	tgggggtccgc	ggcttgcggg	ccagaggggc	atgggggtcg	cggcttgcg	22860
gccagagggg	catgggggtcc	atggcttgcg	ggccagagcc	caggggtcag	ccagcatggt	22920
gctctagctg	ccggggacgct	ggggaggcag	tggccggggt	tcacagagga	ccaggggaca	22980
gcggttgtct	gtcctccctt	gctctgagga	tcagtgggtg	cctccaccgg	ccttggcact	23040
gtgtaagttt	ctaaaaacac	aacatgaagc	tttgggagga	tgtggggcac	aggtcccagt	23100
ccctgaggg	cagatgctgc	cagctctggc	aggcgcagc	cgcaggctca	gaatcaacac	23160
gcaattccct	gcacaggcgt	ctgcagagca	aggttcaggc	ctgcttcac	agtaattctc	23220
aaaggtgatg	aactctacgt	gaaactaaag	tcatatgaag	agttttttgt	ttttttcttg	23280
ttgttgttgt	tttgagacga	agtttcactc	tcattgccca	ggctggagt	cagtggcaca	23340
atctgggctc	actgcaacct	ccgcctccca	ggttcaagcg	attctcctgc	ctcagcctcc	23400
tgagttagctg	ggagtacagg	cacccaccac	cgcgcccagc	taatttttgt	attttttagta	23460
gagatggggg	ttgtccatgt	tggtcagact	ggtctcaaac	acctgacctc	aggtgatcca	23520
cccacctcca	ccctccaaag	tgctggcatg	agcccatga	gccactgtgc	ccggcccata	23580
tgaagagggt	tgaatgagg	acagggtgaca	gaaacctgca	catctcagaa	caaagaaacc	23640
agagcacgtg	ccggcgagct	tgggcactgg	cagaggcggt	gaggaagctg	cttacagagc	23700
ctgcagcaca	gcgcaagtaa	tcacatctcag	ccgggaacac	gttccccagg	tacagcgaaa	23760
accccgagg	caccaggagg	cagctctgca	agacagcgac	agaatcccag	gttacaacgc	23820
gccccgtccc	caggctggac	cctgaccctt	caacttctgc	ttcactgtct	gtgtattggt	23880
gactcaccca	cgtccccag	catcaaccac	accgcacct	gggaccgccc	catcctggac	23940
tcctcctgta	ggacagacgc	agccccgccc	cagcccagga	catggaccag	cctccccag	24000
ccatgtcgga	gcatggacc	cccacgctgt	tatctggagg	agagaagaaa	ggggatctgc	24060
caatatattag	agcaaggaat	ggcacctctc	cccacaaaat	actcctgccc	caacatgttg	24120
tgctgtcag	cttccagatc	ccacacccag	gtccagacac	gagactggaa	aacaactgcc	24180
catccccctc	cgtctgcaga	acetaatttc	cagatctgga	agaagatccc	tccaggcagg	24240
ggctccaggc	ccaggggctc	ctgagcaggg	aagaccctag	caggaggcag	ggaggggtct	24300
ctctctcacg	cacagcactg	caggggtgcg	gtggggagg	ggctctctct	cacgcacagc	24360
acccccgggg	tgagtctgag	gggagtcagt	atcaaaggct	actgggaccc	agggtcctgg	24420
cagaggaagc	gaggtctggg	gcagagggga	tctggcctgg	gcgggggagg	ggctgcgacc	24480
aagtcagggg	caccaggtgg	aggagggcag	agcccgagga	tggccaccac	cacccgggag	24540
ccgcctctgt	ccccagctcc	gaggcagacg	cctgtcttgg	tggggcatgc	tcaggccacg	24600
ggaggtgggg	aggaccactg	tgggtgctgc	aggggtgccc	ggcggaggcc	agggcacagg	24660
gaggggagaa	atcacagcct	ggatctcatt	ctcagcccaa	gctacacgga	accgggggtc	24720
cctgcataga	ggcctgtcct	gcagcatggc	tctgagcagc	tgcacacact	caggcccaag	24780
tggctcctcc	aatcatctct	gtgcccacga	ctgtgcaggg	aatggccagg	accccgaggga	24840
aatccctcgg	acatctggcg	ctgcccgtcc	acccagacc	tgttcctttg	ttcccagct	24900
ccctcccage	cggccctcga	ggccctccct	aggaggagga	ggtccctgag	gttctctctg	24960
tgaggggcga	cctgaaggcc	tgagacgctt	cctccacact	ttgcagggtga	cccctcagag	25020
gacctggggc	cccagagccc	gagggtcatg	gagactcctg	gggcccattc	atggccctgg	25080
gactgtccct	accctgggtg	gactaagcca	caacctggag	cagctcaagg	ctggcacaac	25140
agacacccat	aaattaataa	aaataattgt	gaaaacacaa	gcaaaacaag	ctcgtcggca	25200
tccaagagtt	ctgcagcagc	agggttagtc	tgagagttgc	tctctctgtc	ccacctgggg	25260
ctccagggcg	ctgcagtcgg	tcaccagagg	gaccagatgc	tcgtggccct	ccaagggtct	25320
agtgtggagc	tactcacccc	catcagcaca	gagaagaccc	acgtcttgtg	gctgaagcag	25380
gggggagctc	tcttcgacag	ctgcaggtcg	ctcggtctcg	cgtctggggc	atagctggcg	25440
gggtccttgc	ggcccgcctc	cagcgtgggc	atccggctcat	aggccagctc	ctctctgaat	25500
ggctcctggg	tcatgtgact	tggggacacc	acagctgtgc	tgaatgtaca	gccacgtgtc	25560
accagttctt	tatctggaat	aaaattatca	tcggcttttg	ccactctgag	gaaacttcaa	25620
taagtgtgtt	ccaagaaata	ttttttaaca	aaagaaatat	tgttcatact	gaagtgtctt	25680
aaatttgaag	aagaaaatga	gcacttgaat	ctaaaagtga	aaaagaaata	actttcctag	25740
aaaaacggag	ctgaatatgt	tgggttcagg	gtgagattct	acactttaaa	tgccctcattg	25800
atccatctgg	gccctccagg	tgcaacacct	gacaacatcc	atcgccaact	tcgtccatga	25860
acacatcacg	ccggggactc	aagcacgtta	aactgctcca	attggtagct	aaacgagaga	25920
ttgcaaaaca	tgcccttact	caacggctta	atgtctgagc	acttacctcc	cccgtgtctc	25980
tgccgttggg	agcactgggt	tctgggtgag	ggacttccag	caagaagtat	tcacaaatga	26040

aacaaaagct	cagcaaactt	gagctgaagg	caggggaagg	agagctgctt	cctgaatata	26100
aatgagggga	ggaatcgggt	ggatcgtaga	aatgtttcgt	gttggttgtg	taaaccactg	26160
cctcgg						26166

<210> 602

<211> 7029

<212> DNA

<213> Homo sapiens

<400> 602

ccaccaccgg	ccacctgagt	gtccgtgagc	gggccgaggc	gctcatcagg	tccagcctgg	60
gctcctccac	cagctccacc	ctgagcttcc	tcttcggcaa	gaggagcttt	tccagcgccg	120
tcgtcatttc	cggactctct	gctgctggag	ggggcaatac	cagtgcacac	cagtcattcca	180
gcagcgtcaa	catcgtgatg	ggccccctag	ccagggctgc	cagccaggcc	actcgggtaa	240
ggggctgggc	agggtccacc	aggacaggct	gggatggtgg	cacgggctcc	tggcctgagc	300
gtggcacctg	ccttgcgttc	ccacccttct	gcctgcagaa	ccccatcccc	ttctctatgg	360
ggctcccaga	gtgacaaagg	acagtgatta	gacacgaagt	ggcttagctg	ctcttgaaag	420
cagacaagat	acagagcaga	tatcctgtaa	acgataatgc	ccaggcaggc	actgaaagga	480
gtcaccggat	acagaggttc	tcgagaactg	tggccatctg	ccctacaccg	gggcatgacg	540
gagaaatgcc	tccaccattt	cacacagcag	gactcttctc	acatgattct	ggcctgaggg	600
agaggaaagg	acacctgtca	atgctggagt	tagagcttca	ctgcttctca	gccaatcgat	660
ttgactttta	agctgctgag	atggcccact	gcttttaggt	atttaaatac	tagacaagga	720
gagttctaag	gacttcaccc	aaataagctg	ttacttgtcc	agaatcccaa	accagctgag	780
atgaaatgaa	tacttgagct	tcttcagtga	gaaaaaagta	aataaatacc	cagcagtgct	840
cctatgtgac	ctggtagaca	gggaaaatcg	atggtgtcaa	ggcaaaaatg	ggtcaggttt	900
ggagagttcc	cccactcctt	ttgagtgttc	aggttttcct	taccatggct	catgctttcc	960
atcaagcacc	agagtgtcag	tggcttggcc	tctggttctg	ggtgaggtta	tttgagggtg	1020
gagacggggg	gctgcacctg	aacattttcta	gtgtcaccct	ccctctcctt	catgggaaac	1080
agctctccag	ggaagtacct	tcctgccagg	ggaagccaag	gctggggccg	ccgccctaca	1140
aggagccaca	ggattgcagc	catgggtgcc	acctttcatg	gaaggggaga	tttatgggct	1200
ttcttggaac	ccccaggctg	tcctggccaa	gaggaaagag	gtgggttact	caggagtttg	1260
accttagtta	gataactaaa	agaatacatt	ttccctccct	tttctttatt	tcctcaataa	1320
aaatgtacaa	agttatcacc	ttctccatgc	cccaatctgt	gttaaagtca	caatctatgg	1380
gtgtagtctt	gggattctgt	caaattcttc	ttcctgtctt	ccaaaatgga	caattgtcgt	1440
agggaccaca	tgcccccaga	atacaatggc	ctctgtgttc	tactggggtc	aagcctgcta	1500
gaactcagca	ttcatgacag	gggctaagtg	tgcatgaagt	gacactgact	acagctagaa	1560
agccaggcgc	acaaatgccc	cttcccccca	gggccgcctt	ttccagcgca	gtcatccaga	1620
aaggcccacg	tgcaagagccc	ctgtgtctca	gatgctgctt	cagttgcccg	tcctgtcctc	1680
agaggccact	gtgctggccc	tctatcattt	gacctgactt	tagaacctga	cctcaaggat	1740
atggcagcgc	tagctcttag	ctcccacagc	acggatgggg	gtgatgccag	ttagaagtgg	1800
gtagtgaacg	tttgctgagc	tgttcactgt	ttctctcttc	tccttggaag	cacctctccg	1860
agccatgtga	gccccctgat	gccaccgagc	aggggcagct	tcatgaccga	tgtctggctg	1920
aggctgtggc	ggacactctc	ggggttgtct	gcaggagagc	aagccaggag	gacatggggc	1980
tggacgacac	ggcctcgcag	caaagtgtgt	cagacgagca	gtgacgggcg	tgccggccggg	2040
cggggagggt	ggctccccc	cacctccacc	ctgcattgct	ctccctcgtg	ctcccccatt	2100
caccacaacc	aaccaatacc	gcgatccatg	agggactcct	cctgtggaaa	aggagagctg	2160
ttccagaaca	cagaactgat	ctcagggtttt	tgaaaaaaaa	aaaaaaaaaa	aaaaaaaaat	2220
caaacaacaa	caacaaaaaa	acctcacatg	atggggaaac	aaaaaaaaagc	aacaaagaag	2280
ccacaccaca	cctccctggc	caggcacagc	gctgcccaga	gcggcacacc	gcggacagca	2340
ccacacatgt	tccagaatct	gaaatctcaa	aagccattca	ctaacttaaa	acaactcaac	2400
agagccatga	aacaaatgcc	ctgatgaaaa	taagacaact	gcatgttaca	tcacgggcac	2460
tttatatact	actgtttacca	tgaaaaagaa	atgaacagca	gcacgtctga	taccatcagc	2520
tgggcagatg	cattaagggtt	aaatctaagt	gtcaagaaaa	ccctatttct	ttataatatt	2580
tatgcagctg	ttaagcgtaa	catggtggca	gcttcacaac	aagaaccgtg	atcatgcatg	2640
cagtcatgtc	tccagtatcc	tgtgaaaagc	caggatacgt	taggatgtga	gtttagaaac	2700
tgagtccatt	cgtgcatagg	aaatccaccg	cggagtcaca	caatgctcct	cactgtagtct	2760
caggcgattg	gtgggccgcc	agcaccctgc	gggcttcaca	gggacgcgtg	cttggttctcc	2820
aagccccgca	acccttactg	tgacacacaac	atcgcacaca	cctttgtttt	tgaattataa	2880
atggttatag	ttattgctgc	gtccagtgtt	ttgagttata	ctgaagcttc	tcatttctac	2940
aagtatatct	tttatggtga	gaacgacatt	tgggtaaaatt	ctgagacaac	ttttcccatc	3000
ttcaagacc	caggaacctg	tatccttgct	ggggtagagg	tcccaaatg	cagtccatag	3060

agtatcactg	gcctggtgaa	ccatcccttt	tcaaaagaca	atagttagaa	ggaaatactc	3120
aatttttaaac	agtcacacaa	atctcttcaa	agtatcttagg	atcttggaat	ttgaggagag	3180
ggttggggga	agggtattgt	agagaatctc	ttgccccttg	gaaagtaa	ggtaatgctt	3240
ttctaatttt	tttttttgta	aactaagaat	cagcaattaa	taaaagcaag	tgtactctat	3300
aatcacagac	agaaggttct	tatttttcagg	tcagcactcc	ctagagggtgc	aaactttatt	3360
taattttaaat	gcagttgttt	gtctaattggg	aagctgatag	ggccttgctg	cagttctcta	3420
agggtggccaa	attaaacttg	gctggcagct	cctgtaatcc	tcttgggcaa	ctttacagcc	3480
aagccccaag	ggctaaatgg	caggcctgga	gctgtgagtg	tggcctcccc	acggagggtg	3540
actccttgag	ttcagtgagg	aaaaccacgg	tgccctggcag	tggtcagcca	ggagtatgac	3600
tggccactcc	ttaggcatcc	agaagtagga	aacacagaaa	gcattccaca	aaacggggaa	3660
tctcccaaaa	gagctagaaa	cccaggctgg	aaggaaatgg	cagcgaggc	aagagagcaa	3720
gagcacccgtg	ggtgtctctc	catcccgttt	ctctggggag	gttcatgagg	tgcttcttca	3780
acagttattc	tggttcattgc	ttatcacagt	tcacgagttc	tcgtggcctc	ttttgtgggg	3840
aggagggagg	atgaaagtga	cacagtgtat	ctacaacact	aaggtcacat	taatcagata	3900
ggaatgcagt	gacgtctctg	accgtctatg	agagcgggca	tctcgagtgt	gcataccgag	3960
gcacagatgt	gcacacacat	ccgcaggcaa	ctgcacccac	agagaaaagg	tggcagattt	4020
ggagtcaacc	caggattctt	gggggctggt	tgaccagcca	tcaacagtgc	agccatactt	4080
ctttttcttt	tttatcgtgg	tacacaactt	ttatatctac	aactcatgaa	cttggttaac	4140
tggtccttca	tctagtcagc	tatgtatcag	aaaggacttc	ctgcaaaatg	ttatatctca	4200
agcccccatt	tagaggaggc	atccctaaac	tgacatttct	tgctagagtt	gttcaaata	4260
tctgccagta	tatagctaaa	gagttatttt	ccagttcaag	agttatttgg	gggctgggca	4320
cgttggtcca	cgctgtgaat	cccagcactt	ttgtaggctg	aggcaggcaa	atcatgaggt	4380
caggagttcg	agaccagctt	ggccaacatg	gtgaaacccc	gtctctacta	aaaatacaaa	4440
aaattagctg	ggcgtggtgg	cgggtgcctg	taatcccagc	tactcaggag	gttgaggcag	4500
gagaatcgct	tgaacccagg	aggcggaggt	tcagtgagc	cgagatagca	ccactgcact	4560
ccagctcaag	cgacagagtg	agactctgtc	tcaaaaaaaa	aaaaaaaaaa	aagagttatt	4620
tggaacacaga	tcaaaatggt	ttctcctcta	aagataatat	taaaaccata	gcacttggtt	4680
ttatataaat	catgtggcca	atttggcatt	attgattcta	aattttgcag	tgtgttgaaa	4740
tcactctggca	agtaatttgt	taaaatcatg	cgatgcttca	acttctttgc	ccacaaaatg	4800
tgcaatgcaa	tgctgtttta	cttagccac	ccgtctccag	cctcatctac	catgctgttt	4860
tgtcccaagt	cactatgcta	cacaagcact	cgccatcagc	acacacacag	gtgtgatcca	4920
cagacacaac	cttctatgaa	tacggtaatt	ggcaggaaaa	gaagaggagc	aggctgttct	4980
cacattttcc	agcccaccag	cgttcccacc	cccttgataa	ctggaggggc	gggaactgag	5040
tgctgaatt	tgagctttta	ctaggatctc	tccctgtcaa	ggctgatcat	cagagatgac	5100
actatccatt	taaaagactc	acccatctcc	ctgcatgtgc	ttaccctcac	tgagaggtaa	5160
gaagaaacaa	tttatataac	tattacgtgt	taagcagctg	gcgggtatgat	ctgctaaggga	5220
ggaaaaggaa	agaatgattt	agtaaatcgt	gcttcaaate	agtcctgatt	cctcccatcc	5280
gaccttggtta	ttctagctga	gattcttcat	ataagcaata	catgttaatt	ctgtgctttt	5340
caaattgaat	tcctccctga	gactcatatc	caaccatctg	ttagatatatt	tgctttgttt	5400
gaataggagg	cattccaaac	tcaggataaa	gagaatccct	gacttcaatc	tgccctgctg	5460
ccccacccc	accatccggc	aagagctcct	cacctcagcc	gtggcaccga	caggagggtg	5520
gcgtcagct	ctgctcctct	catcctggct	gcgtgcaggg	aggggacggg	cacgtggagt	5580
tctgccacgg	cacctcttct	tcctttaaat	ctcagcatga	cactgttgct	acaggctgtg	5640
tgcttttggc	cctgagttct	agttatctgt	gaattcatct	tatccttcat	taaatgtcat	5700
tgctttacaa	tacagggatt	gcactctgaca	tctccataca	tgctccatga	tcattctgtt	5760
tgactaatac	aacaatcatt	tcaggacctc	accacaagag	acactaaacg	ttctttggat	5820
ttacagcagt	ttatcactgc	taaatgtcaa	ctctgaggtc	tgggggcaca	aaacacacta	5880
aaaatgctaa	agcctcaaga	aggacgcagc	agggagtgat	gaaagagtga	actttggagc	5940
cacgcagacg	tgggttcaaa	tctcctttgt	caccgctatc	actgtgctcc	tgaacgaacc	6000
acttaaacac	tccaagcttg	tctctttacc	gttaaaggga	aagtgtgcag	aagctcccg	6060
agcccaagct	gctagggggc	accctgaatc	tgctccacac	aagtgcatac	tttcaagtag	6120
gcagtgcac	tcccacccca	cataagcaca	actggcttca	gtgataagcc	cctcagacta	6180
gctatttaac	tttgaaataa	ccttcaccag	ctttctttct	catttaagac	aaaatcaaa	6240
tctacaaaac	agacacggct	gaaacaccaa	gctcaaaagg	acaagcacca	gaaggacat	6300
ggcccttggt	gtttcagatg	catgaagggc	ggaaacgcaa	aacggcctcc	cggagggtgc	6360
aggaaaggct	ccatcttgat	ggggtccac	tccagctggg	gctgaccagc	tccaccacgc	6420
ctgggtgcac	attgatgaca	tttccccagc	ctgcctccct	atctcttggt	tctcctgagg	6480
gctgtgggtac	tttcagattt	acggccagga	tcaggttccc	aggcctttgt	gggaagcctc	6540
tacccaactc	agaggccgtg	cctctcctgg	cccactgagg	catgcagccc	acaccggtgt	6600
cctgggtgatg	gtggctggaa	gtcacagcca	gcctgccaga	catcctgagc	tcggaactca	6660
gtctccctga	acagccccgc	caggcaggga	ctgtggaagg	agatgccac	ttcctcctcc	6720

tgggcaggta	gcccttttga	gggcttagtt	cataatctat	taggcctccc	tgttgtggtc	6780
cctccaaggc	taggcaagtc	caagtcaagc	ttcacaaagt	tacctcgga	gaaaagcgct	6840
gaggaaagag	acactgatgg	aggaaccaga	cctgggctgc	gtgccatttt	ggttttgatg	6900
tgagcccttc	ccgccccatt	cactgtgccc	cagtgtccag	cccagggctc	ctcaccgcc	6960
acatgcccg	cttgtccaca	gttagagaga	aggcacactg	ctgcttatac	cagtgggttt	7020
gtagccaat						7029

<210> 603

<211> 28215

<212> DNA

<213> Homo sapiens

<400> 603

tcctgtctgt	aaccatcaga	tttattttta	tattttattaa	gcagtaagca	aacagagttg	60
ggggagatga	cctaaaaatg	ttttcttttg	gaataaatatt	ttttaaaaaa	tcaaaataact	120
gttatcactt	taagttgcat	gaggetgaag	ctgcacctgg	agaggaattt	aatttttcattg	180
acatgcaaaa	ctgattaggg	agtgaactct	ttcctcccg	ttcccttgaa	cacattttata	240
aacttcaacg	ggggtgaatt	ccatctaata	ctctgaaaac	catttctcat	ctcacagttt	300
acccaaatca	tgtgcatgac	tgcaagagga	aataaacaag	aaatctttta	gcatagataa	360
gccacaatgg	atagttaatc	ttgtacagac	aatccagcat	taaggctaata	ttgatctttt	420
aaacatttta	tggaacacag	ctgttgagtt	ttctctagaa	aagcccacaa	ggttccataa	480
ccccataggg	atacagcctc	gacaggcagg	gctccatcag	gctcctcttg	aactgggcac	540
tccttcacgg	aaggcaggaa	tgacagtgct	ttcacttcct	gctgctctgc	acgcacgtca	600
cgatattctg	cagaaggtgg	tttctgtttt	ccttggtgac	ctgtgggaag	aagtggagaga	660
acaggcttca	gagctccttt	cctcttcttc	aatcttctgc	taggtaactc	tctaaaagaa	720
acgcctggaa	ggctgggaga	gggtgaggta	tgttttgtta	cccaggcagg	aggcccagct	780
cttcaggagc	actcagaac	aggacaggaa	tcaccgagtc	ccagcatcag	tttctgcca	840
gtgacagctc	aaaaagtcaa	agtgggtttg	gagcccagac	agatttcagc	caaccatggg	900
gagagctgtg	aagtgagtc	gacgaggcac	accgggacgg	atgatgggca	cacaggaccc	960
ctgagcacga	cctgtcctga	atggaaggaa	ctcaactgtt	ggagtgaagc	gaggaggaga	1020
gcctgggagc	cagcggggcc	caggagggca	cccagcagag	cagcagtgaa	gcgccaggga	1080
ttctgggatg	ctcagtcate	taccgcctc	tcacaaaca	tcaagtgtct	atttgaaaca	1140
tggaagaagt	ggagagccag	agacgtgagg	gtgcctccgt	acagactgtt	actcaggcct	1200
cctgactgca	gtgtgttctc	caacacttac	accattacaa	aatcaaaaca	aagcaacaaa	1260
gagttcacca	gagctttacc	cgatgatctg	tttatttttc	tttactacc	acaccatccc	1320
gagtgcccca	gggtaaagga	agggccatct	ctgctcccat	cacagtgcct	tcctacttgg	1380
cccatataat	atccatccac	tcaacacacg	ctgtgggggt	ggaagggcaa	acaggagcca	1440
ggcacagaga	tgcgcataga	gaagcaccac	aggtaaggac	cctgacctca	tggagctcgc	1500
agaccaggac	aggacaggca	tgaacaagga	caatgaagga	gtctgggggg	caggcaggga	1560
caggggcatg	tgtggggcca	ggggcaggaa	aggcttccag	gggtgcttaa	gcctggatgt	1620
aatttcgaca	ggtgaaccat	ggaaaagggg	ctgagccaag	gttcccggta	agagcaggga	1680
gtgcatgtgg	aagccttctg	aggttcaggg	tggttgatc	tgaagagggg	gcctggcata	1740
caataggtgc	caatacatgt	ctgaagagga	gatgcagagc	ggacctcgtc	aattcttggtt	1800
cctggcacct	gctcaccctt	cttgggaagag	tgctctgggt	gtcttttagga	gactgtacgg	1860
tctaggaaac	ttgccccag	ccaacaagtg	ggcaagccag	gccctggcaa	cttctctgag	1920
atctgtaccc	caagaggagt	gactgagatc	tgaccccaa	gaggagttag	ctcacgcagc	1980
aagtgccaga	agctgatccc	atttctactg	gtcctggctg	cgtaaatccc	gtgatcccat	2040
ttctactggt	cctggctgcg	tcagtcccg	gatcccat	ctaccggctc	tggtctgcgtc	2100
aatcctgtga	tcccatttct	actggtcctg	gctgcgtcaa	tcctgggctg	ctgtggctcc	2160
acttgaaatg	aggacagtca	gcttttcctt	tggttctcat	ggacagctcc	aaagcctata	2220
aggctttttg	atgctgtttt	cacttaagtt	agccaaagtc	cattcctggt	gtttgcattc	2280
aagggaatcca	cctgaggttag	aaaggaggcg	acacagaggt	gggcaccaca	ggggcccttt	2340
tcttccactc	tgagttcagc	agtgattgca	gtagcttctg	cctccagcca	ggctctgtga	2400
gagtggactg	tgatacacag	ctggagaatt	tgctctgggt	ttctatgaca	cagtacgggtg	2460
actacagagt	aaataacaag	gtagtgtata	tttcaagata	gctagaagag	aagatttttga	2520
atgtcatcac	cacaaaaatg	ataatttaaa	gtgacagata	tggaatttac	cctgattttga	2580
tcattatata	atgtatacat	gcactgaaac	atcacactgt	acccataaaa	tatgtacatt	2640
atatcaatta	caaattaaaa	attaatttga	aaattgagca	gaatgcaaac	actccaatat	2700
taatattttg	atactccctt	tgatttccct	aagattattt	ctgaaaatta	tgcaataaaa	2760
tggttgatgtg	caactctctg	cagtattcac	ttatgatatt	ccctgttgag	aaaagcacac	2820
tcccaaatgc	aagaacaagg	atcacagcat	ctgccaacct	caggagtctt	tgcttatgt	2880

gaaattctag	tctacttttt	attcaacagc	cagaattttg	gttgcagaaa	gcctttcctg	2940
agaagcta	tagaagaggg	aactgggagc	tgaggagcag	aaaaggaaat	aaagaagact	3000
gcagaaagaa	gaaagtaatc	ccaaccattc	tttttttctg	cactggagcc	ttaagagaaa	3060
gaaaggaagc	tgagtgaacc	tgaacccttg	cacctgcccc	gtggctgtag	ggggggccct	3120
ggtaagaatt	tatcctgggc	acagtgaaga	taagactgtg	agcaccatgg	ggtcagagcg	3180
cacatctcat	tcacctctgt	acctccagat	ccaatccctt	gcttattagg	aatgttgggg	3240
gcccttcccc	cagtttcaag	gaaatgcatg	tggttttggt	ttgctttctt	gcacatagtt	3300
gtatactaag	aggcatttct	tccctgcct	gctccatcca	tgttttcagg	tctgggggtg	3360
ttaaagtcag	aacataagca	ggacccagta	tctggtactg	catctgtgcc	cagcagatga	3420
gtcaagtact	gtctctcgcc	gtacctaggg	caaccagatg	agaagacaaa	tttgtgat	3480
caccacctca	acttcttatt	taaacaatca	agaagcggga	aggggagact	gagcagggca	3540
tacagacact	gatcatatta	aacaagttag	aaggcagtg	ggtagcatgc	aagcagcctg	3600
gaagatcaga	taatatccac	tactgctgc	caagaacatg	tgcaccccaa	ggtctaaaca	3660
agaggcttag	tcatactatg	aagctgccag	cttgaaaaag	aactaaagtt	gttgataaca	3720
ttttcaatgt	tatgacatta	actagaaggg	agcaaaatca	atcaatgaca	cactcattgg	3780
gatacaatgg	gataaaactc	aatgggatac	aatggtaata	acctcttaga	gttctgaaaa	3840
acaaattatt	gaagaaccca	taagtcaact	gctatgattt	gactgtgtcc	cccacatttc	3900
atgtgttgg	aacttaaccc	ccatgcaaat	agaggtggga	cctttaagag	gtgattaggt	3960
catgggggca	gccctcatga	atggattaat	agccattatg	tgggagggag	tgagttatgg	4020
caggactggg	ttactgataa	aatgatgtct	ggttctccct	ctctattggt	cactgctaaa	4080
actccagtgg	atagaacagt	acctgacata	cagtgcgtgc	tcaatattta	ccaaatagat	4140
gaataaaaa	actccatcac	caatttcttc	tactgatgct	ttactaggta	ataggaggtg	4200
ccaaagattg	tatcagttag	attttatttt	ccttctcagg	tactgttctt	tcttttcttt	4260
tttcagctat	tttttttaac	acatcagaga	atgttatcgt	tttgccctcaa	ctgtcaaaca	4320
taattcttca	aaagtcaaca	gaggaagaaa	agcccactac	actcactcag	agttttactc	4380
ttcccatgt	tctttcttcc	ttcctgatgt	tccagggtct	cttttaccat	ttcctttctg	4440
ataagagaac	ttcctttggc	cattctttta	gagcagttct	attatgacaa	attctcttag	4500
ttttccttca	tctgtgaatg	tcttatagaa	ttatgagtcg	acagttgttt	caacacttgg	4560
aaaatgtacc	acctccttct	ggccttcatt	gtttctcctg	agaaatctgc	tgctcactcat	4620
attgttttta	ccctataggt	aaggtgctgc	tttcctttca	ctgctttcaa	gactttaatt	4680
ttcataagtt	tgactatggg	atgtcttggc	atgaatttga	gtttatcctc	ttgggggttca	4740
ctgaaaaatg	aggtttatgt	cttttgccaa	atatgacaaa	aatgcagcca	ttacttcttc	4800
aaacactttt	tcaaccccac	actcatctcc	tgttactaca	atgatgtgaa	tgctcacatct	4860
tttggtatag	tcccacaggt	cccagaaact	ctgttcattt	tgttcattac	tttttctttt	4920
aagtcctgct	tttgctcaggt	aatttctatt	gttctacctt	caagttcact	gattctttct	4980
cctgtcatct	ctattctgct	gatgagccca	ttcagtgact	tttttatttg	ctattgtata	5040
gttctaaaa	tattcattga	ttcttctatc	ttctaggttt	ttgctgaaac	tttccagttc	5100
ttgtctgagc	tttttttcat	ttgtttcatg	tgtatctgta	attttatgaa	gcatttttat	5160
gatagctgtt	ttcaaatcct	tgcctataaa	ttccactatc	tgagtcacct	tgctgttgag	5220
atctgctgat	ggcctttcct	cactcaggtt	taggtattcc	tgattcttgg	catgacaaat	5280
gattttcagt	tgtgtctgtt	gtgtgtgtcc	ttaggtcctt	aggttccctg	ccagtcctgtc	5340
tttttctctt	cacttttcag	gtcttcttat	gcttgtatta	taaataacat	ccttagcagg	5400
aaaaataaac	acaagtgtgt	ctactctatc	ttgtctaaaa	ctggaagagt	tctcgggtgt	5460
ttttgaaaag	tactctgttc	acccaacgtt	atgaagaata	agtcaagata	atattactaa	5520
tttggtgggt	atatttcccc	catatcatga	gctcagtcct	atcttcacac	tatgcataat	5580
cattggaag	tactctgttc	acccaacatt	gtgaagaata	agtctagata	atattactaa	5640
ttcgtgtgg	acatttcccc	catatcacgg	gctcagtcct	atcttcacac	tacgcagttt	5700
cagctggtag	caaggggagc	ctgactctga	ccccttttca	tagctcattt	tcttacctgg	5760
aatgttctcc	cttctttttt	ccatttctct	cttcaagagc	caactcaaga	accccttctc	5820
ttggacacct	ctccactacc	actgctcaca	tagatctctc	ccttccctgc	ccctagattt	5880
tgattgcccc	atgggtctgt	tttcttgagg	gcagagatca	tgcctcacag	tgccctaaac	5940
gatggactaa	gtactgaatg	tgaagggcac	tctcaaaaat	ggattcggat	actttatttg	6000
atgtgagcaa	tggaaagaac	ccaaaaatat	atctaataca	acacctaaag	ttgcagataa	6060
agaaaatgag	gttcttggcc	aggcacagtg	gctcatgcct	ataattccaa	cactttgaga	6120
ggctgaggca	ggcagattgt	ttcagctctt	caattcgaga	tcaaccccgg	gcaacatggt	6180
gaaaccccat	ctctacaaaa	aatgcacaaa	tgagtcaggt	tggtgtggac	atgcctgtag	6240
ttccagcttt	ttgggaggct	gaggtggagg	atggcttcag	cctaggaggc	agaggatgca	6300
gtgagccaag	agcatgccac	tgcactccag	catggggcac	agagactaac	cttgtctcag	6360
aaaaaaaag	aatgaggttc	ttgatttata	aaactggaaa	aggccaggca	cagtggctca	6420
cacctgtaat	cccagcacag	attactctgg	gcaacagagc	aagactctgt	ccctccccct	6480
caaaaaaata	agttaaataa	aaaaataaaat	aaaaactgaaa	cagaaggacc	acacaaaccc	6540

caaagcaaca	acaacaaaaa	aaaacagggg	atgtcagccc	ctatctctta	cttaattaac	6600
tcaaaagctaa	ttgtttttatt	tacagatcat	tagaagcaat	gattatcttg	cctggagaat	6660
aatttttgagt	ctcagagagc	ggaagaaatg	tggtatgac	ctaagacaca	aagtctgttt	6720
ctgggcatca	cagtcagctc	ctttcaatcc	ttccttagga	ctgttagatt	agattagttt	6780
gtggaactag	ccaatccctg	gagtctaaca	ctagcaattt	cccggctctc	cagcctagaa	6840
gctatctgac	ctcaaaaacta	attttctttc	atgatctttc	actattcatt	gccttgattt	6900
ccatggaaac	tctataatca	caacaaaaaa	tgtaaaataa	gagaagacga	catgaaactc	6960
tgaagaaccc	cacagacttt	tcagggctct	caaatgtcac	ctccttgaag	agaccttccc	7020
tgatcgccct	tgctactcct	gcccccaact	accacattgc	ctggtttctt	tatttttgcc	7080
tttatcagta	tctgaaattg	cttaacttat	ctgttcacat	ttttggtatt	cagctcctcc	7140
attagaatgt	aagctccatg	aaagcagcgc	cttggtcagt	ctcgttcacc	acagtatccc	7200
aagacttaga	atgacaccta	gcatacagta	ggtgtctaatt	cactattgac	caaataagg	7260
aataaataaa	tcaataaaga	agcgcataca	tttttccaag	tctggctggt	ctaaccctaa	7320
tggtctgttta	ccaccacact	ccaggattct	tggtggcaac	atgtggatac	tccaggattc	7380
tttggtggca	acatgtggat	actgccagtg	ggccaagggtg	acatttctact	cagtgtattaa	7440
aatgatcatg	aggaaggtgc	tcacgggtac	tcactctcca	ctccccctga	taggagtggtc	7500
cctgcctgcc	tgacttggtc	acttggcact	tgccagggcca	gggagctttt	aaactggggg	7560
tggggagtg	ggtgtgtgag	cagagctcag	ccaagagcac	agctaccact	gactcaaaga	7620
aactaaaggt	aggggttggg	gagaagcaat	atctgactga	gaggaaaaca	gagggacaa	7680
agggaaagaa	aggcaagaat	ttagacaaag	tgccagcaat	gccatgagtc	ccttccgact	7740
ggctcagacg	ctgccactgg	tcaacaagcc	ctagcccttc	atctctcaca	tgtggtctac	7800
agcagtgtct	ctcaaagtgc	gggggaccta	aaaaccacat	gagaacttgc	cagaacagat	7860
catggggcca	tccccagag	tttgactcct	tggaaccagg	caaggcccac	tcccaggtga	7920
tgcccatgct	gccattctgc	aagcctcaca	ctgagtggca	catcctacag	atgcactagt	7980
gaatgtagca	gccacacgag	accacagagc	acctcagatg	tgccagtggt	gactgagaat	8040
ccaaatgttt	aattcaattt	aaatttgatt	atttatgtga	ttaaataaat	aattcaattt	8100
aaatatgatt	aaatttatta	aacataaata	gcgagatgtg	gctagtctgt	actgttctga	8160
gcaatgcaga	gagcacattt	ccctcactac	tggaagtttc	aactggacgg	tgctgtctct	8220
cagcacctgg	aagctgtgtc	tcccaacaca	tccacagcct	cttctcccca	caagcacaa	8280
tggttcagct	ttaaaaggga	aatcttttaa	acaaaacaaa	aaatatattg	ctctgtatcc	8340
caacttggcg	cctttcaatc	tgagaagaga	taagcttaga	acaagcacct	tagctcaggc	8400
aattctgatg	ccagacaggt	cctagtgtct	ggtgaggaga	tggaagaaaa	aagcagcca	8460
aacaactggg	accgtcagga	ggccccccca	taagcgagtt	tggttttttca	tcaagtagag	8520
gtataattta	agttctatca	atttctagaa	aattagactc	acctacattt	cagcatggaa	8580
gggaaaaaat	gttaactcaa	aaccaaagag	atatttttaga	gccatctgct	atttttagatc	8640
atctgtctcca	tttccactga	ttatggaggga	ctggctgtac	tcacattaaa	caccttcaca	8700
tcctttctgt	ttctgatttc	ttctacaaga	gccagtggct	ttccttttagg	aactgggatt	8760
gtgccaagga	tctatgtccc	tggggtagac	agcgtctgac	gaacagcttg	aatgaaaagc	8820
tgactgaaga	gctccatctt	cccaatctca	tcgactgacg	acactctttg	ccctggggcca	8880
ctgctgcagt	cggcctgaga	atgacaaaga	ctttcactgg	gacatcagag	tcacattaat	8940
caaagggccc	atgggtccca	ctcccacatc	actcaccaat	gaggtaaaaa	agacagaaac	9000
ctttttactg	gatttcaaaa	agtgacagca	tcccacagac	caccgctggt	actgtgtggg	9060
aggggactgc	acaaggttga	gtcccaggag	ctgggaatca	ttaggactct	tggaagctgg	9120
cagctatgcc	tgctaccagt	gggatgttca	aggaagtaac	ggacataaat	tggaataaag	9180
tcatgagaaa	gagaatctga	gatctaaagg	atgcaattgt	acttactttt	ttttcccttt	9240
tagccaagac	ttgtttcctt	ttaattttca	ctttttttcca	acaacgctta	tggaaccagat	9300
catgaaatac	acaaacatct	acctagagca	gttatctccc	cccagcacg	tagggaatct	9360
catatggctc	aaaatggaaa	aaagaggcca	ttattatcaa	caaaggctcc	catgcttgct	9420
gtctcacttt	ttttaagcct	gaggtatttg	ggtgccactt	attttctggt	tgtatataaa	9480
tataaagctt	gatctctgtc	ttggatcccc	tctctcgaat	cactcactct	gggggaagag	9540
aagtgtctatg	ctgtgaggat	actcaggcag	ctgacggtga	ggtccacgtg	gtgaggcact	9600
gaggcctcat	gccaacagcc	aagaggaaat	gaacctgcca	gcaaccacat	gagcaagctt	9660
agaggcaggg	ccctcccagg	caagcctcag	atgaccacag	ccccagccaa	cagcttgact	9720
gcaacctcag	aaccccagct	aagctgtacc	tggtatcctg	atcctcagat	actgtgtaca	9780
ataatgtgtt	tggtgtttta	agctgtctaa	ttttgagata	acttggtcca	tagcaacata	9840
taactaacac	acatgtcctc	tatagaaagc	cttcctgggg	aaggctgaca	ggactttggt	9900
tgattcttcc	ctgggagggg	caaaacagaa	catgtaataa	acacttcaat	gaatggtgaa	9960
tgacaaatatac	accttatata	tggttgatata	catgattatt	ttgaaaactg	tatgtaaagc	10020
tgattttacaa	agtattcttc	actacagttc	tgatttccct	aatgatgaca	gcaatatagt	10080
cctagagggc	atgtctgagt	taagctagat	tttgttcaaa	ttccaaaagc	caaagcagca	10140
tatggtacag	tgtggctggt	ggtagggatc	agtggcaacc	aggggcagcc	agtgacagac	10200

ggggctgcgg	gcccagatcc	taaaggcctt	cgaaggcaca	cacagagggtg	ggaatcttct	10260
cccacagccg	aaagagtcta	atccaggagg	gatcacaagt	tgtgctagaa	agactgctgg	10320
ctgtggagtc	agaaacaaat	gttagactcc	ttttggaata	gacaagataa	gatagtgggt	10380
gtctaaaccc	cagttgtgat	tgcacggaag	cagtacagca	gtgtttttca	gacttttaag	10440
taaacagtac	tctattttcc	tactgcata	tgtacactta	tgaaatattt	ttccattcat	10500
tttattagct	aaaagatcaa	taaggagtcc	actgtaatca	cccaagagag	gtctgaacaa	10560
tctccgcact	tctgtgttcc	tgacatgctt	cattttttgcc	tctctattaa	gtttatctgt	10620
acacacgcct	ggtctcccca	cttagggcag	gtacatgggt	gtcctcgtcc	gcatecttcc	10680
tggggaaactc	accgatgtcc	cagagctgag	aagtggggag	ctgaaggagc	aatgtcaccc	10740
tccactgggtg	gggtcgggga	gaagggcaga	gcactctatga	agtaagtcac	tacttattcc	10800
aagtttttcc	tccaaaacga	aagccatatt	tgggagaaat	aaaacagcta	tcaaccacct	10860
gtctatgata	ataaaaaacag	acaactgtac	aagtaagggtt	ctgtcttccct	gggggcattgc	10920
cactccaact	gacccgactg	ttcccaagtg	ctgtggacat	tttgcctgcc	ccagagacga	10980
agagtaattg	tggatgccat	tctctgggag	gctgtcatct	aaaagccaaa	ataaaaactta	11040
ttctggcacc	tcaaaatgag	ttttggaagg	tgccaaatca	gacaagaagt	gatatgaaag	11100
aatgtgtgta	cacatgcaca	tgtatttatt	tgactatata	catgagggtg	gtaaaaatgca	11160
cgtggccatg	tgtaaatata	cacgtacagg	tagaaagtgt	gtggctcttc	aacaaccagc	11220
cttcttgcaa	tcccttagaa	cattcaccag	tgaaagctca	tcaacattta	tttaagtttc	11280
agcacaaaag	aattttggaca	cacatgtata	tacatttttc	taccaattgg	aaatcctcat	11340
tttaaaacct	tagcttacat	aaaatcctca	atctgtccag	aattggggaa	ttttataatc	11400
caagaacttc	aggaatctca	aaaataaatc	tgtgattttt	aattaaaaat	gcaagttatt	11460
catattcagt	tgagagaaaag	atgtcagctg	ctgagccact	ctgaagcatg	tagacactca	11520
gcctgctttt	ctaaatagta	caagatcata	cactcaagggt	cttaaaaaaa	gaaccactat	11580
aacgtgtaac	atggttttat	ttctatataa	attcaagcaa	ctttagaggg	aaacaaagaa	11640
ataagtaagt	aaacaaacat	tcacccctt	tacattgttc	taaattgata	gagacacaga	11700
cttagaacia	taggggcccc	ggtttgaaga	tggtcaggaa	ccctcccca	acccccagtg	11760
tgaggagagt	cctaatagagc	tcccagagaa	actccaccta	cagctgctgg	agtaaggagt	11820
gtgtaaaaac	tgtaggtggc	tctcagccac	gtggtcagaa	tcacgatgta	cacaccatct	11880
ggggtgtaca	caccaactgg	ggagcaccct	ttcctccctt	cacagcctct	cctcagagaa	11940
caaccagggc	agcattgctt	cctagtgcc	cacctcagtc	ctatgtaaca	cactagcctt	12000
cctgggcaca	ccctcacag	gcttccactt	cagctgatta	taaattgttc	gccatgaagc	12060
gcacttttag	tttccctggt	ccgggagaga	agatatttcc	ttagatagag	tcctaaaatt	12120
gaccagccag	ggataagaga	agctacgaat	aattttataa	ctttgggttac	actcacctag	12180
tttgctttcc	agaaagatta	gaacaacaaa	tatcttcgta	ccagttatat	cagagacctg	12240
aaaatagtgt	gatttttttg	ggtcctttat	ttttatatgt	acttttataa	atacaaagaa	12300
catataaata	taaaataatt	tcatttaacc	aaaatatcaa	actgagagca	agctaateca	12360
agtggctctt	gccttattct	gaattatttg	cataataaat	gtttccagtg	gtattaatgt	12420
taatttttag	aggactgttt	ggattgtttt	attttaatat	cagacacaca	gactagctcc	12480
tgagcttacc	accctgggac	agcaagtatg	gaaagtcag	aaagtgaata	aggagtgtct	12540
ctcagaagtt	aggcagcaaa	actgcagccc	ttcgccaaac	agcagcaagt	tctagggaag	12600
cagaaaggca	aatgggtgta	acagcagcca	tctctgagcc	agcccacaat	tcctcaccca	12660
ctgaagtatt	tagctaaaaa	tgcagggctc	cggcatatatt	ttatgtgtgt	ttattccaag	12720
ccttcaagtc	tcataatccc	tttgcgtgct	ggtggcatat	ggactgtgag	tctccagggc	12780
atagccagga	caaggtgtct	agactgcccg	atgggccttg	gtaacccggc	ccttccccag	12840
tcaagaatac	tccgggcaga	agctgtccc	ccggacatgc	cagagatcct	caccccgga	12900
cacagacaga	ctagctctga	ggctcttcc	ggatgtccta	aatggcctct	cgggactcac	12960
aggggctcac	ccacatggtc	acccgactga	agagcgcttg	aatggtagcc	atggggtttt	13020
ccaagctatc	ttgggactga	aacaacacct	cctggctgac	agtcagtcca	gtgagacgga	13080
gagcccagta	ctcctcgtcc	tcctcatgct	ctgagcactt	gggactggcc	tgcacatttg	13140
ggctcctggg	actccatgac	agattactat	cccactccgg	acccagctc	cctggcaaac	13200
acaaaccaaa	ttgtgaaggg	aggctcctct	caaggtaactg	ccatccacca	cctcaattaa	13260
cttctcaaga	aaataatcac	tgctattgct	ctgctgagca	cctcctagga	gccaggggcc	13320
aaggcacttt	acaagcatta	cattcagtec	tcccagcaac	ttcacatagc	aggtaacagc	13380
atctgtttca	cagatgagga	aaggaaatta	ggcattaagg	gatttactca	aaactcactg	13440
agagcacagt	gacagagctg	gagtcaaacc	agagatcacc	tgacttcaaa	gctctcttcc	13500
acaccctgtg	tgcaatacgc	ctccacactt	tgattctgaa	ataaagaata	gcattctagga	13560
aactgacct	accgaaga	aactgcttcc	ctctccaata	agaacgaata	gcactctggt	13620
gtttagggat	ctatggaggc	ataggcaca	aacctcaatt	tatttggagt	aatcatattg	13680
ctctaaatta	ctcgaaaata	actcatattt	tgggtctgag	aataatatca	ccaaaattat	13740
ttcatcaagt	atggatagcg	aatggccac	tgcagtaggc	agatatgata	aagtaaaagg	13800
acttctctcc	tctaccagga	gcacaccccg	agaagacggt	ggaagagtta	tgaccaggta	13860

tcctgatatg	tccaccttcc	tgccagtgtt	tacaaaaacc	aaattaaaaa	aaatttcact	13920
tgcttagtaa	aaattttcat	caatatatta	gcttttggtg	aatgtttagt	atctctgata	13980
cctgataccg	ttttcattag	aaactgcctg	aggagaaaga	actgattgtt	tttccataaa	14040
taaaatgggt	atggcttttc	taatggggag	gtaaccggat	acaaatagag	agaagcacag	14100
cttagagtgg	aaaaaagctt	aaccattatg	gcattttttt	tagtgcagct	tcaatgtata	14160
gtaattttat	gtttgttaat	tactgctcac	cttgctagag	aaacaatttc	aaaagagagt	14220
agttaaatct	gcttgccaat	taaggcctca	agagaaaatt	atttttatct	taagatgata	14280
taataaagtt	tagataaaat	tagaattggc	taggggaaat	ctgatgagga	ggatgtgcat	14340
ggtctcacac	tatctcccca	ctcactgctc	attagtgtca	aagaaaaaaa	tagtaactat	14400
acagtggaga	aataggacaa	gtccttgatc	aggtaatcaa	aattaatatc	actaaacatc	14460
acacacctcc	agatgagata	ctcgagaagg	atgcatcatc	acttatgact	tatggagtat	14520
tcacagctta	tttggtcatg	aggaaacatc	agaaaaactc	caaaagatga	acgttctttt	14580
aaatttgaac	tatatctctt	acaaatgtca	atgtcctgga	agacaaaaga	tgactgtgga	14640
aatgtttcaa	attaacggag	gctatggaga	tgtgacaact	aagtgtaca	tctggaggaa	14700
aagaaatgtt	acaaagaata	ttgtcaactg	atgaaactag	aacactaacg	atagattaaa	14760
gtattttttc	aatgtaagat	ttacagaggt	tgataactgt	attgattatg	taaaagcata	14820
tccttatctt	taggaaaaat	atactgaaca	tttaggagta	aagtaccttg	atgattgcaa	14880
cgtattctca	aatagtcacc	cccttcacgc	ttatatattt	atacacacac	acaaacacac	14940
acacacacac	acacacacac	acacacagag	acagagaata	agcaaacaaag	gcaaatgata	15000
aacataggtg	actctggata	atgagagtat	acagggtgtc	ttgcactatt	cttactacta	15060
taactttctc	taagagtaaa	attttatcca	aatgaagtta	aaaaaattgt	caaaaaaaga	15120
aaacacacac	gtatgtactt	tctcagtagc	agactcaaga	aaacaaccaa	ctcaccctgt	15180
atgaacttcc	tcctaattgga	gtgtggtttt	agactgatac	gcacgggagg	cgagacagaa	15240
ggaaatgctg	gaaatgggac	aaagtggag	ggaaaaagaa	aaacggcaac	agtttatata	15300
aactcaaccc	cagtcacagc	taaggagcgt	gtgacttaag	gagcatgcaa	cttttctgtg	15360
tttcttgaga	gtggactgca	agaagaagaa	catgaagggt	tcataaccca	gggcaaaaagc	15420
ctgcttagca	tctaaatcca	cagaatctcg	ccaacaatca	gaaataataa	agtctcagtc	15480
tctgtcfaat	agaaattatg	aagatttgcc	atgacaaatc	ttgcaaaatg	aactgcagag	15540
tcaacctcat	gctgaatttt	cacctcatct	tcttatgctg	attcactgca	ggaatgtcct	15600
tactgacagt	ttaaaaaactg	attttctgtt	tgcgccagat	agcttttaat	ttccctggct	15660
gatcctgcat	tacatacttg	taatacatga	ggtagagaaa	cagaagctga	gagagaacaa	15720
agaatcaaat	gccacatttg	ctaacagcaa	tgacagaaat	tctagcaatg	ctgaggagct	15780
tgtcaatctt	tcaagaatgg	atcctgacta	gaacttggtt	tttctacatt	ctttctaaag	15840
ccaagtggcc	tgagagtgc	ctaaggaaca	cttccaggtc	gagtctaaaa	aaacaaaaac	15900
aaaatacttt	tccctagaca	ggagtccctc	caccttcaaa	ggaagtcttc	aagattttcc	15960
aaagcagagc	ctatttcaga	acaaaaagta	gatcctgctc	tcaaaaacaa	atatacttta	16020
aagacttatt	ttaatcaaaa	caggaaaata	caagggtcaa	actatgtttg	ttttccctgg	16080
gtgttctgat	tttagcttac	tcttcccttc	acagatcttt	gtaaaaaatg	acactgttca	16140
cctggaaaaac	agggtcttga	gtagatgtcc	tttgttcttt	aaaacattat	aatctattgt	16200
ctccattttg	tgtgagtagg	agatatgttg	aaaatcaata	aaatgttaca	tcttacattg	16260
catcaaat	taataaagca	ttgagggtag	ctatcaaaaa	ggccattatg	aaaaaggcca	16320
gcattatctt	atcagccttg	atcattagaa	aacagaaaaa	acaatcctaa	ttccagtagc	16380
accagaaaaat	aggagagccc	tatgaataac	ctcaccaata	aaaattttta	agaaacagat	16440
ggagaaagag	aaacatgttt	tgggtctgtg	agaatttaaga	ttatctgaaa	aattaagaca	16500
ccctttatgt	taaaataact	atagtcccaa	tcactccata	taagacattt	tttttaattg	16560
atagtaaagt	cttgattcta	tagttcactc	cagctctacc	acttacacaa	ttagtgtgtc	16620
cctgggcaag	taactttcca	ttctatgcct	cagtttcttc	atctgtaaaa	taggaataga	16680
gtgatagtgt	tctgaggatt	aagtgagttc	atgcctggca	cgtagttcgc	actcaataat	16740
agtttactat	tacaagtgcc	accattacta	cagtttctga	acaaggccat	tttttgaaga	16800
agaaaaataa	aaacgattac	catggtaatt	aaaatactat	ggtactgatg	caaggatcaa	16860
acagatcaat	ggaagagaac	agataactct	gaaacactat	acatacaagc	acacatagtt	16920
ttaataaata	taatttaagca	taaaaaacta	attagaaatg	ggttatttta	caaacagttt	16980
tagtaaaactg	gctaaatata	tggagaagaa	tcagctgaga	atctcatagc	atattacact	17040
caacataatc	caaatgaatt	gaaaaacata	atgttttaaaa	aaagcatgca	gaagaagaaa	17100
tatataggta	aaattttata	taaatttgga	atagggacag	acttttctct	accttgaagg	17160
gaaaaataatc	accaaagtga	agtgtctaac	tgagaaaaac	agaatcaata	atataaaaaag	17220
gctatctgct	ttataaaaaca	tctatttaag	cccaaagaaa	ataaatggga	agagcaatgg	17280
atgaacaact	aaaatttaag	aaaacttaat	gaacaactga	aaaacattta	acccatttag	17340
taactgaaaa	atgcaaatca	aaacaaagca	gtgtgttgaa	aataagtaga	gtgctcaggg	17400
ctggcacagc	gcagcaagac	aagcacactc	acaccctggc	agtgggacac	aaagtcaacg	17460
cagcaccatc	aagaccttga	aggttcacac	cccaccatct	cagacttcac	cttttagacc	17520

ctccccaggg	aaacaatcat	ggctagagaa	aaagattcat	gtataaaggg	tgctttgttg	17580
caagggttact	tacaatgggtg	atacgggaacc	tgaatgctca	acactgaggg	agtaatagtt	17640
aatcaaaga	tgaaaactca	taccatgaaa	taggatgaaa	ccactaaaat	ctcccagctt	17700
tgaagattag	catgtttgtga	gaccattccc	atgtccctca	atcatattaa	gggaaacaca	17760
ccaagcctat	gaaactatac	ataacatttt	ccgtgatcct	gaatgactga	ataaataaac	17820
caggtataca	aaaggggcag	aaacaaaata	agctaactt	ggctaactta	gtgataagat	17880
tatgagttat	tcacattgtg	ttttttat	ttattttaca	ttttttataa	tttttttaac	17940
catgaatatac	tagaacttga	atactcagga	aaataacaaa	tggtgacaaa	taaggaaaga	18000
gttaactcat	ggaatgaaaa	aaattaacag	tcaaccctac	tagaggcttt	ccaaaaacct	18060
tcttgagtct	agaacactta	ccacacacac	tctatttttc	tttattttctc	acgagcgacc	18120
acgatgctca	ggctccatc	ctgcctaaag	aaacgtaacc	aggctaggca	cagtgggttc	18180
cgctctgaat	cccagcactt	tgggaggcca	aggtgggtgg	atcacgaggt	caggagttcg	18240
agaccagcct	gaccatgatg	gtgaaacccc	gtctctacta	aaaatacaaa	aattagccag	18300
gtgcgggtggc	aggcacctgt	aatcccagct	actcggggagg	ctgaggcaca	agaatcgctt	18360
gaaccctgga	ggtggaagtt	gcagtgagct	gagatggcgc	cactgcactc	tagcctggct	18420
gacagagcaa	gactctgtct	caaaaaaaaa	aaaggaaaag	aaaaagaaac	agaaacata	18480
accagagcag	ttttgcaagg	tgaacctggg	ttgtgcctgg	ccctcctgag	cctctcctgg	18540
agctgctctt	cagctcccgg	ccactttttt	tttttttttt	tttttttttg	agatggagtc	18600
tgctctgtat	cccaggctg	gaatgcaatg	gtgccatctt	agctcactgc	cacctctgct	18660
tcttgggttc	aagcgattct	cctgcttcag	cctcctgagt	acctgggaca	cgggcatgtg	18720
ccaccatacc	cagctgattt	ttgtttttgt	tttttagtaga	tactgggttt	caccatattg	18780
gccagcctgg	tctcaaaactc	ctggcctgaa	gttatccact	cacctcagac	tcccaaagag	18840
ctgggggttac	agacatgagc	cgctgcaacc	agtcaccagcc	acatccttac	ttccccacct	18900
gcaaataggc	atagccctgc	ttggccta	tagagaagta	cttttttctt	atttttttgt	18960
agtattaaaa	cacacacaca	cacatacata	caaccctcaa	actatccttc	actcatacat	19020
attgaaattt	cttacacaca	atggatattt	cttattatcg	gaattttgtg	tttcatagat	19080
cccagcacta	tgaactaata	ctgtgtccct	ttataaaggg	tttctaacac	ttccagttaa	19140
cttgggtgtt	ttcattgcca	gtatcaaaaa	tggtgtgttt	atactcccca	gttttgttgc	19200
ctaattattt	taattaatat	tcttttcatt	tttttcttta	gtataaagac	aaaacactag	19260
ttccttctcc	tttcttcatt	cccataaaat	atgtatgatg	ggagaaaaat	ttctgtccca	19320
gaaaagaaat	ccatgaccct	gactgggtga	gaatcctata	ttagtccatt	ttcacactgc	19380
tataactacc	tgagactgga	taatttataa	acaaaagagg	tgtaattgac	tcacagttcc	19440
gcattgtttg	ggaggcctca	ggaaacttac	aatcatgggtg	gaaggcagaa	gggaagcaag	19500
gatattcttc	acgtggcggc	gggagagaga	gagtgcaggg	gaaactgcca	cttttgaaac	19560
cactggatct	catgagaact	ccctcactat	cgggagaaca	gcatggggga	aaccaccccc	19620
atgatccaat	cacctccctt	caggtctctc	cctccacaca	tggggattac	aattcaagat	19680
gagatttggg	tggggacaca	gagccaaatc	atatcaaatc	ccctgccagg	aactttttct	19740
acattggaatg	tacatgtctg	catttggcaa	tcagaataca	aaatgttggg	agaagtctgt	19800
atttctttat	tttttaatta	aaaaacagat	ttatgctctg	atctgggtcag	catatgatct	19860
cttatataat	cttgcactca	gacactaaac	acctgtgcaa	actctcctcc	caggatttgg	19920
tctactctgt	ctgagcaggg	taagtaaaaa	attcttttga	ttgaccagct	cagttcctaa	19980
aaccagaatc	ttcacttgga	atttcatttg	aagtatttca	cttgactttt	gaacatttaa	20040
gtagagagga	atgtatgtga	cgggaaaaca	gctaaaaaga	aaagtacat	gttctctgct	20100
cccgcaaaac	acagtggcca	cgagagtc	caggacagga	actgagggtg	agttccaaga	20160
ggaaggaaat	ggggaagaag	gaggtgggag	gaggaaacac	agcgtaggaa	gaaaaggaga	20220
acttgggtggg	ttccaagaag	cacaaccccc	tgctgaaaca	gaccataaga	taccaccagc	20280
cctctgagat	tagaggatat	cctcagaggc	tatagctaaa	atcttcagca	gcctttgggc	20340
aaccaccact	acatacttca	gctgagctct	gaatgtcaag	gagcagagag	gcaaagatct	20400
atgaagacag	cgtgctcacc	aaaaaaaaatg	gcaagtgc	agggcctcag	cctggcatat	20460
gtgggaagtc	tgattgaacc	agtgtggctg	aagaatggca	agatgaggtc	agaggttagt	20520
aaggccagat	atcacagggc	tacagggcct	tctaggccac	tgggaaggact	ttggacttta	20580
ttcttggtgc	catagaaaac	tctggatagt	ttatagtggg	tttttgagac	aggtctgtat	20640
catttaattt	tcacaaatca	aagtagtaag	tctgtaatag	attaaatgac	actcacattc	20700
cttaacatgg	tccacagagc	cctgcactct	atggccccc	acctcaccaa	acttaccttc	20760
ttacactgct	cctgctccag	ggctctgagg	tctgaatgta	tctgttccctg	ccatttagaa	20820
tattctcccc	agacctcccc	acctgcacac	atacaaatat	cccaatacta	actctctctc	20880
cccaatgccc	tctcacctgt	tcctttctgt	ttaaatgtca	tcttcccaga	actctttcct	20940
ggtcccttgg	tctaaagtca	gttcttctctg	tcctccctt	tcatagcacc	ctgttctttt	21000
ctttcacagc	attaatgacc	atgacaagta	taaatttact	tagtgtctac	ctttccact	21060
agactaacag	ttttgaaaga	gtagaaacat	gtctgttttg	ttcatgactg	tatatgcagt	21120
acttgataaa	tatctgataa	atagatacat	aaaactacat	aatcaataaa	acaaaagctg	21180

gttttttgaa	aagatcatct	aaattgacaa	acttttagac	tgaccaagga	aaaaagagaa	21240
gatttaaata	actaaaataa	agaaagaagt	gacaatatca	ccaatcttac	aaaataaaaa	21300
gcattatggg	tgaatctatg	aacaactata	tgccaataac	ttagatactt	cagatgaaat	21360
ggacaaatta	ctaaaaggta	caaattacca	caactgattc	aacaaaaaaa	tacaaaatca	21420
acagacctat	aaggagagat	ttaattggta	atttaaaagc	ttctcaccaa	gaaaaaccta	21480
gccccacatg	cttctctagt	gaattctatc	aattattcaa	agaaaaatta	atacgaatca	21540
ttcacaaact	cttccaaaaa	ttagaaaaga	aggaaacact	tcctaactct	attagaccag	21600
tattaacctg	ataccaaaaa	taaacaacaa	tatcccaaga	aaagaaagct	acagaccata	21660
tcttttgtga	ataaagatgc	agaaatcctc	aacaaaaatac	gcctgagtaa	actctataca	21720
aataagacac	agttaacatc	atacataatg	gtgaaagact	aaatactttc	tttctaagat	21780
taggaatta	ataaggatgt	ctactctcac	cacttttatt	caatgtttga	ctggagggtc	21840
tagccagggt	aattaggcaa	gcaaatgaaa	taaaaggcat	tcaaagtaga	aagaaagaag	21900
ccgtaagatg	tcaataaagt	ttttttcttt	tttaaaaaag	gtaataataat	aatataatac	21960
gttaactgct	tacagtactt	ggtaggcatt	caataacaac	tggtctattat	gttcatataa	22020
tgacattttc	tcttcctaaa	tgtttgttgt	gctgtgaaac	cagggttaaga	catgactgtg	22080
agaagacaga	ggaagactt	atctttggga	atgttggtac	ctggggcatca	agagcctttc	22140
caaaaataaa	tattttatag	tactgaattt	ataggaattt	atctgtagct	cagagtataa	22200
gcaaatatg	ttgtttatcc	ttattaagac	tcaatctttt	caattgttaa	atgcaaaact	22260
ggggccttta	agagcaaaa	gcattctgtt	tccatggcta	gcaattccca	caatacacta	22320
agagcagatg	ggttcaaaaa	gcagaaatca	cgtactcaca	ttcctcaaga	cgggtagtgc	22380
caactgctca	aaagaagtca	ggtcgaccac	atactgccc	actcggcatt	cacgttttcc	22440
agggtggaggc	tctaacctga	aggaaaagac	attatgttct	ttgttgaaaa	actcctgtat	22500
tgatttctgg	tttttagctg	ctccactgag	cctctggcat	tccacatatg	ctaaatcatc	22560
cttaaaaatg	accaacacaa	aatgcggtgg	tctgtaaaagc	tgatcagggt	ttctctgctt	22620
tgaacagagc	tacctgttcc	aaagtgtcca	caactccaac	aatgggcctt	gcagttatgg	22680
cagggtctatc	tcttaagggtc	caagcagcta	ctgcatcaac	agtctttgaa	aagtggcacc	22740
agaaacagga	ctaagaatta	taaagtgaga	ggagtttatg	acttggtgaa	caagttttta	22800
gtaaaatatc	actttcttat	acttttttca	tgtgatgggt	tcattctgtt	ttctttctct	22860
gagaaatccc	taaaggccta	agattcttga	gगतatagta	caacatttgg	ctcaaccctg	22920
tgcccaggga	gacactctca	acctaaaggg	aaagcagatg	ggcatccaag	gacccaacag	22980
agtatattatg	tttggtgaat	ttagctcttg	ttgaaaagct	cccaagcac	agatggaagg	23040
ggagcttaga	taattagaaca	ccacagaaat	gaatatcag	tacccaactc	tcgataaagg	23100
cccccggtg	ccggacaacg	tgacgacatc	gaatcctatt	cttctccctc	cctgtctgac	23160
ttcttcggta	taaaaatccat	caacaggcac	accagaggat	tttaaaacct	cactggcttt	23220
atggatcaat	gttgtttttc	caactcctaa	aataaaaaaa	aaaaaaaaaa	aagaagaaaa	23280
gcccattagg	aaacattccc	ttactagagc	acacacagca	cttgtggact	ctgaggcagc	23340
aattatgggt	ggtagagaaa	tgggctgtaa	atggatttat	gaatatgaac	ttcaatttaa	23400
ttttgattgc	tccaggtgct	aaaaatgctt	aatttcaagt	agaaacaagc	ataataaaaa	23460
cacgaatgat	atcttgagggt	ttatttttaa	attgtgaaac	attgttaatt	ttgtcacgta	23520
cacaatccca	gaatcaactg	agaggttcct	gatgatattc	tcccatgcc	tttgcactct	23580
gtgaaatggt	ttacagttcc	catttttctg	cccaggaagt	aacactgggtc	acacttgagt	23640
cagggtctgg	gaatttaaga	tttcagcttt	caagagatta	caaacggacc	tacacttaac	23700
agtgggaaaa	tcactttgtt	cctcctttga	cttacattgt	tgtaactcct	gaaaatgtgt	23760
ctcttaata	tcatagcat	cctgttaat	ggctactttc	aaactttttc	ataacagcaa	23820
gcctatcagg	ttagcaactc	cttccaacat	catcttctcc	agggctctcta	agcatttctt	23880
cacctttatc	ccccacacct	tccccagttt	gaacctatgt	acctctgccc	cctcagcctc	23940
cccaccttga	tccttctgt	ccatccagcc	tggtcagctg	actactctga	tgaactcact	24000
ggtttgttaag	caccaacagg	tgctacctaa	tatagtaata	ctcatcactg	acgtcatgga	24060
gccagacact	gttctagcac	actttggaag	cattttcttg	gttaagtcct	cacaaccatc	24120
ctctgaggca	attaccatcc	ttatgcata	ttacagatg	gagaaactga	ggtacatggt	24180
ggttagggtat	tttaccacaag	gctatacccc	tcataagggtc	cataccctttc	aacagggggac	24240
tttacctgtc	accatgactt	tttaaaatat	gagccttggt	cccaatatgg	atttaagtaa	24300
gtggcatcat	gactacccaa	caatggaaag	agagagaaaa	ctcctagcat	gtctgcaagt	24360
gagctatttt	gagatactac	agagttgcaa	atcatgctat	ttctaagact	acccactctt	24420
ttaagcctcc	ttgacataaa	atatgatcca	ttattcttat	ttaatgtatc	tatcttcaca	24480
cttcacatta	aaataatggc	acctggcttt	ctggaacatg	aacagcaaca	caacaggatt	24540
ctggctacag	taagccacag	tgagcatgca	gtcggtagaa	ctgtgtagaa	cataaaatga	24600
tgacatttcta	atccagccct	ggccatcagt	aactaactgct	ttaggaaagt	cactaaagaa	24660
tctgtttcat	gcaagtaatg	gcattgccga	atgtgtgaagc	tgctacttct	tttctgaagg	24720
gcaatttcaa	tgcgccctgcc	acagcacctt	gtagtccatg	actaggaatt	catcctcagg	24780
aaacatcaac	aatacaaatg	tgtgaaagag	gacattcact	gcaacattct	ttataatagc	24840

aaaacactga	aaacaaccta	aatgttgatt	gtaaggggaat	gttaactcat	ggcaccatgt	24900
atataatagc	acataaatat	acagaaatag	catgcaacca	ttaaaaaata	tactgtcttat	24960
atgtattttat	tagcatggaa	aatagaccac	aatgtatgaa	aataatatat	ggaaaaagca	25020
ggttaatagc	agaaaccatt	ccattatggt	ttttttaaag	aatgggtcaag	tacgtgtcta	25080
cagaaaaaaa	aaatgtcaag	aagaatacag	aacaaagatt	tacaatgttg	atttctgatg	25140
ttcaaatcc	ctgtgattgt	cactttcttc	cttaaacctt	tcttggtttt	tttaattctt	25200
atactgaatg	ggctctactc	ttatcctaac	aaaaattgcc	gtttatattt	tgaaaaagat	25260
aaaatggagc	aacggtaact	attcctgttc	acaaagggtg	tactgtgggg	actgtatggt	25320
gtgtagaaca	tagtagagca	ataaatagga	agcatttggt	caaagtccct	tttggtctct	25380
tcagctctag	gaatcttctt	tcagttaatt	ttttcttcat	tagttaagct	gctaccccaa	25440
tgctgtctgg	ataagaaatg	acctctgctt	caggagacct	cgagatgata	gctgtatacc	25500
aggcacaaca	agatcagaaa	gctctggaat	tatttggtt	ctggttctcc	cctaagcaga	25560
tcctcagata	aagattcaag	tgcaggtagt	ttaacctggg	cagtgacaac	atgatggact	25620
ggcaggggaag	aaattcagaa	agggaaggga	aggacaccag	catgaggtgc	actgtcaagc	25680
aagttccact	gggggcagct	ggagcttcaa	ccccctgggg	aatcctaagg	gacaagtcag	25740
ggcaagtggc	tcagtatatcc	tgtctgagga	gtgagaaagt	agggaattta	tcaactaact	25800
ttaccaatc	acaggttgaa	ggctaatecc	agggcacagg	aattccctgg	ctcttctggc	25860
ctgctgtggt	tgcaggccaa	gtgggtctca	gggaccagag	aaagccctcc	aagatgagtc	25920
atgggtacag	aggattggaa	atcggaaaaa	atgctaagtg	ccaggggcac	taagaggata	25980
tgcaacaaaa	agtgaacctc	ttgagaggag	actttacctg	atgggtctgaa	catattgaga	26040
aaacagaaag	aaactaggca	aataaaaaaca	cctgacaata	actcctaata	gggaaaaaag	26100
ttatgtgttaa	aaggaaaaaa	aaaaaattag	agggcattgt	ggtgcatgcc	tgtagtacta	26160
gctactagggt	aggctgaggt	gggaagatgg	tttgagcctg	gaaggtggag	gttgcagtg	26220
gccaagattg	tgccactgca	ctccaacctg	ggcaacagag	agaggccctg	tctcaataag	26280
aagagggaaa	aaaaagatgg	gtaaggtggc	tcacacttat	aatcccagta	ttttgggagg	26340
cccagatggg	aggatcactt	gaggctagga	gttgagagtc	agcctgggca	acataacaag	26400
agacaggtct	ctacaaaaaa	aaaaaaatag	ccgggtgttg	tggcatgcgc	ttgtagatcc	26460
agctattcag	gaggttgaag	tgggaggatc	acttaagccc	aggagtttga	gaatgcagtg	26520
agctataact	gtttcactgc	actccagcct	gggtgacaaa	gcaagatcct	gtctctaaaa	26580
taaataaata	aatggaaaag	aatcataga	ttactatgtg	gctctgttgt	gattgtcttt	26640
acatggccat	aatactgtaa	acattgacta	atgaaaatta	cgctgtaact	acattaagaa	26700
gagaaggaga	aaagacaaag	gtgcgtgggt	ttgaggacag	gtttaagaga	gtacactgt	26760
agaattattt	gagtcctttca	actacgtgta	ggttaagactt	tgataaagca	gaaacaagaa	26820
ccaccatcaa	tacaatcacg	gtaacaggac	acctccatta	ataaaacaca	cagttgtctt	26880
ggggctcagc	tgctgagtat	caaactgcat	tccaagtttc	aaataaagga	ttgacaaacc	26940
aactttcaga	aaacagttct	ttgcaatact	taggagtgac	tttagatagc	aggcatttct	27000
caaaccacc	tctcctcctc	cacccctgc	tccccactc	ccccatccaa	tgccctgacaa	27060
aatcccaag	tctgcaatat	tagctgtagc	ctttgtact	tacaactaaa	cataatcatt	27120
aaaataaagt	gaaagagaat	tctagatcca	gggttacagc	ctttgatata	tgaaccaca	27180
ctaaacttca	aaattagatt	tgccttgcaa	aggagctgaa	gaaatcactt	tctccactct	27240
tagcccactc	atcttttttt	agcctatctg	atgcagccta	cctgtccttt	ttagtaatgc	27300
ttgatacatg	ggtagcgcct	tggtttaaaa	gcacctcctc	ctacacctct	catctgacct	27360
caacgctatc	ctgcttctca	gatgagaact	ccacaggcca	caggggttag	ggatctgaca	27420
gacatcagga	ggggacagcg	acaggaacaa	gcaagagtgt	ctgagaaggg	ctcctgtagg	27480
taccaaagct	tctccacctc	tggcctcagc	tgtggaggga	attcgtgggg	atggagatgg	27540
ggatgggggt	ggggggatga	acttagatgg	gaaagaaagg	ttacaacttc	agtttctgctg	27600
tctccaact	aaaatttacc	attttttttt	tgcacgatca	atgtagcaaa	gacccacagt	27660
aaggaaaatc	ctgtgactat	caacagaaat	tagacatctc	cacttcacat	cgcggttgcc	27720
gcagatctct	tgaataacca	tttgtgcaga	ccacaacgtc	aacactacag	taggagttac	27780
cgctgccgct	ggccctgctg	gtttctgccc	ttcatcaaga	agccagtcta	ggacccctc	27840
acaagtgtgt	tctaactcct	taggccctgt	gtcttttaaa	tcacgttttc	cggaaggag	27900
tacaactct	tcagactacc	aagcccgcca	tttaaatgg	gaacttcaga	ggccggagcc	27960
ctggagccgg	agaccctccc	cgacagcaca	aggtcgcccg	cagcccgccg	gccccaccc	28020
cctcgacctc	ttggaggtgg	ggatcccttc	agggttacct	gggggccccg	ttaggaacac	28080
gtgccgggccc	atactggtgg	gcgggggtag	gggttgccgt	caggggagca	gtccaggttg	28140
gggtcgcaat	tcaggtcagg	tccggaccag	ggtcgcgact	caggaccgcg	ccaccgctg	28200
tcgagggccc	cgccc					28215

<210> 604

<211> 15689

<212> DNA

<213> Homo sapiens

<400> 604

agagcccaga	gagctgaacc	tgcaccccgg	acctgcggcg	accgtcgtac	accatgggcc	60
tccacctccg	ccctaccgt	gtggggctgc	tcccggatgg	cctcctgttc	ctcttgctgc	120
tgctaagtct	gctcgcggac	ccagcgctcc	cggccggacg	tcacccccca	gtggtgctgg	180
gtgaggcacg	ggtctcgtgg	tggatctgtc	ggtcggggcg	gacggggccg	ggcgggggct	240
gccttcccgg	tctgcttctg	ttccagtcac	gaaatggggg	agcgtattgg	tatctgtctt	300
gtcacttagg	tgatctagat	ctgccggctc	acctcccgcc	atgctggggc	cgggtgtggt	360
cagctcccca	cctcctgtcc	tggtagaaaa	tgggggtgag	tgggagagtt	accatctggt	420
tattcatagt	tccacctgtc	cgcacatttc	ccaagccttg	cctcccctta	tcccattttt	480
aagctggaaa	gacagggtgt	tcagcccccac	tcttgaggga	tgggtgggggt	gtgtagagt	540
gctcctgagt	tgacttctgc	atcgacctgg	gcctgggttag	gaggctgtca	ccctcgacct	600
ctccaatgcc	acatatgcca	gaaggcattg	ctgaaaggaa	cctccttagg	gaaaggattg	660
ctgtcctagc	tggccaccaa	ctcccacaa	ttatcagatg	tgtggcattg	cctgagggaa	720
aaggcctaag	ggaactgaa	gacaactgaa	gtcaggggaa	aggggtggga	caatggccat	780
gaacctgtgt	caggcaacat	gcttgtactc	ttaccctgcc	acacatgctt	ggactagact	840
atgtggaggc	tgggtgacct	ccctgtctca	ccccgtcctt	tgatcacaa	cctggcaact	900
ctacaacggc	cactgtattt	ccttgcaggg	gatgggtggg	atgagacctc	tgtctggggg	960
gccttgggtg	cctcattgag	gccgtcactc	ccatccagag	ctgggtgtgtc	cgtggccagc	1020
caggattcct	gaaagcagag	gcactctgagg	catgaattac	acgtggagtc	tagtgagca	1080
tgatctccat	gctctttctg	ctgagagtac	tttaaattggg	gacgatgcaa	atcacagaag	1140
ggtagagtgt	gcaggtaggg	tgggtgccagg	caggccccac	caggagttcc	cagccaggaa	1200
aagctccagg	gggatactag	gcccagggtt	accatgggat	ttgggcagac	ttggccctgc	1260
ctccccaaag	cttgcaggat	aggaataaca	gtgatcccca	gagaggaggt	ctgtgtgggg	1320
caagcacaga	gaatccacca	acccagcctg	gatgggtggg	tgtcaagtaa	ggcttctctg	1380
agtatatagc	tggagctaag	gccaggagag	agtaattgggt	cggggagaga	cgtgagcatc	1440
tcaggctgcc	tgggatcgag	tcacaggagg	agtggactgc	acaggacttg	tgactgggtg	1500
ggtcatctga	actttatctt	gagggcctca	gggagtcctg	ggttggcctg	cagagttcta	1560
agtctgaggg	gcgtggcatt	aggaagcatg	tggctctgtg	cacacaaaat	ggcacatagc	1620
cattttgctt	ggattgatgc	taaccgcact	catcaattca	gtcagtctgt	ttatccttgg	1680
tcacagcaga	agagcctcag	accccaccca	gaatcacaga	gcagcaggag	tcctaactatg	1740
cccagcttct	cagggagtga	ggctgctggc	cttagccctg	ggagacctca	cgggtggcag	1800
ttggataagc	agctcctggg	cacagagcag	ggatctgacc	ttgactgtca	gaagatcaga	1860
atcctctagg	ggtggatcct	gaaatggtgg	tggaggaaag	agagaccagc	gatgtgatac	1920
agaagaccct	gggcaagggg	aagggaacct	aggcaaggcc	atttccacct	cttgcagcct	1980
cagtctcccc	atctgttaag	tggaaatagt	aaggctgtcc	cctcccagtg	ttacttgagg	2040
tgaaggcat	gtggatgggt	cttttcctag	ttccaggcgc	agatgggctc	aggaagtggc	2100
cactgctatt	tttaggggcc	acacagcctg	accagggtaa	ggagcatctg	agcaaagcag	2160
atctgggtgac	ttcctctttt	accatttccc	ctttggtaga	gacagtgacc	aggggtctctg	2220
ccctgccctg	cccagtcac	aggcatgtca	tccagaggct	gtcatgacag	ggactccctc	2280
cctctgcacc	catacatga	agggaggtga	aggcatgtgc	cgcccctgcc	tctcatggca	2340
ccctgaagac	actgggatgg	tgcccaggga	gggcacgccc	tgttcagggt	ggatttacgg	2400
tcagtcccca	gtgaatgtcc	aggagagcca	agtgtctggt	tttcaactca	tgatcatgga	2460
ccctaaacgg	ggatgtgttt	gggaagtggc	gagagcatgg	catgtggggg	caggtgaggg	2520
ccgaaagggtc	aatgggagta	acgagactgt	gaagggtctt	gacgcagtgg	ggagggtatt	2580
gggtgtcacc	agggccccag	agttctgagt	acactgaata	ggatggctgg	gatggagaga	2640
agtcacccta	gggcctggac	tgtgtgtgata	atggtgtctg	ttcagggtgg	ctgtttccaa	2700
tacgggctcc	cagccatgct	agggccctcc	agatgatctg	ctctctggca	ccttactgga	2760
ctctggcctt	tagtaaggcc	tgggcctctg	gtaggctggc	gggtgccaat	gtaagcttct	2820
ctcagctgtg	tttctgttca	tttccctccc	accagcctgt	cctgcatact	ttgtctggtt	2880
gaatttttagc	tgagtggccc	agggctctgt	tctgtttcct	tcttctcttc	tcaggggcga	2940
caggaccctg	tcttctatgt	agcctgggat	agctatgggt	ggaagacttt	tgggttcaag	3000
cctccagggt	atatactctt	tttttttttt	gagaccgggt	cttgcctctg	caccagggct	3060
ggagggtcaat	ggcacgattt	tggctcactg	caacctctgc	ctcccgggtt	caagcaattc	3120
tctgtcttta	ggctcctgag	tagctgggat	tacagggtgtg	tgccaccaca	ccaaggtaat	3180
tttttgattt	tttagtagag	atgggctttc	accatattgg	ccaagctggt	cttgaactcc	3240
tgaccgaag	tgatccactc	acctcggcct	cccaaagtgc	tgggattaca	ggcatgagcc	3300
cctgcgccct	gcctcgaaag	tatatatcta	atgacaaggg	ccttgggcaa	actttggagg	3360
ttctggaatg	caaaggggtc	tccaagcccc	tcctcccagg	cagagctccc	atcgggggtc	3420
attaaccata	gaaacctatg	gtagagggtg	gtctgtgttt	gctgggggtg	attcagacca	3480

agatctcatt	taacagatac	ggaaactgag	gcctagtgtg	gggagtgact	tcacctgaa	3540
cccccttcca	ataatctgaa	tggcccagga	ggatgttcca	gtgaaaatcc	aggagactta	3600
ctttatctgg	agttggagac	aatgttaggg	cccttcccca	aacatgtcag	gcctctccca	3660
agccccccac	aggcatctct	gcaccacaca	gcagtagcag	cttttctgca	caaagatggg	3720
tccttggect	ttgggtcaag	gtccctgctc	tctgaatttc	ctgccaccag	cactgtgctt	3780
taattttgaga	tgtggaactg	cacaggtctg	ccatattatc	tgtggctctt	cagggggtct	3840
gctgcagaca	tcaaagttct	tgggagtctt	gaacctgccg	ggctgagggc	tcacacatgt	3900
cctgtgcccc	ctgcagtccc	tgggtgattg	ggtaaccaac	tggaagccaa	gctggacaag	3960
ccgacagtgg	tgcactacct	ctgctccaag	aagaccgaaa	gctacttcac	aatctggctg	4020
aacctggaac	tgtctgtgcc	tgtcatcatt	gactgctgga	ttgacaatat	caggtggggg	4080
ttcggggcaca	cagagggggg	tgtctgtcac	caacagtgc	tgagaggcct	ccagagtctg	4140
ttccttctat	cctcatctcg	aggctcactga	ctctctcct	tccccaggtc	ctcgggtctg	4200
tctggtctgg	tctggttggc	accacctctg	cactcccagg	cagaactaac	tttcccttcc	4260
tgtctgccct	gttctcttac	tctccagtcc	tggcctctca	tgcctacaca	caattttttt	4320
tttcttttat	tttgggatgg	agtcttctg	tgtcactcag	gctggcgcca	tctcagctca	4380
ctgcaacctc	cgtctcccag	gttcaagcga	ttcttgtgcc	tcagcctccc	aagtagctgg	4440
gattacaggt	gcccggccacc	atgcctggct	aattttttgt	attttttagtg	gagatgggtg	4500
ttcaccatgt	tggccatgct	ggtcttgaac	tcttgagctc	aagtgttctg	cccaccttgg	4560
actcccaaat	tgtctgggatt	acaggcatga	gccactacgc	ctgcctacac	aaaatttctg	4620
tgtcccgacc	cctatttcaga	gcctcggcat	ggccccccacc	cctttccttg	tctgtgcctc	4680
ggcctcccct	acctctccag	ctgcttattc	ttcttgggac	atgccatgct	tttgtacctg	4740
ctgttctttt	ggcctggaat	ctatttctac	accctttgcc	tgataaatgg	cttccattca	4800
cttttttttt	tttttttttt	tttgagagcg	gagttttgc	cttattgccc	aggctggagt	4860
gcaatggcgc	gatctcggct	cacaactctt	tttttttttt	tttaacttta	ttttttgaga	4920
cgagtcttgg	ctctgtcgcc	caggctgggt	gcagtggcgc	tatctcggct	cactgcaagc	4980
tccgcctccc	gggttcacgc	cattcttctg	cctcagcctc	ccaagtagct	gggaccacag	5040
gcgcccggca	cagtgcctgg	ctaatttttt	gtatttttta	gtagagacag	ggttttcaccg	5100
tgttaaccag	gatggtctcc	atctactgac	cttgtgatcc	gcctgcctca	gcctcccaaa	5160
gtgctgggat	tacaggcggt	agccaccaca	cccagcccca	ttcactcttt	aaaacatgac	5220
cctaggccag	gcatgggtgg	tctgtctata	tcccatcact	ttgggaggct	gaggcagtca	5280
gatcacctga	gctcaggagt	tgaagaccag	cctggggcaac	ttggtgaaac	cccatctcta	5340
ccaaaaatac	aaaaaaatta	gctgggcatg	gtggcagtga	cctgtagtcc	cagctactta	5400
gggggctgag	gcaggagaa	tgtttgagcc	aggggaagcag	aggttgagct	gagcagacca	5460
ctgtaccag	cctgggttgc	agagcaagac	cctgtctcaa	aacaacaaaa	acctgacctt	5520
gggtccctttg	tgacatgtcc	cttttgactc	cccagagcgg	tttgccctctc	ctcccaggcc	5580
ccatgcttgc	ttcctctaaa	catcatcatg	tggccgaatt	tgtctgcagg	catgtttgcc	5640
caaattgcac	aggcactgta	cattttatat	actttctttc	agttagtctt	acagcaaccc	5700
cgttttgaaa	taggtgctgt	tttctttttt	tttttttcac	cagtgttact	tgccaacagg	5760
tggtttttaa	acctgcttta	caactgcgaa	atctggaggc	tcaatgaggt	tacaaaaattg	5820
actgtgctca	ctcagctaat	aagtggtaga	atcagaattc	aaatccagaa	tgtgtggcgt	5880
tgagctgagg	ttccctccca	ggctgagttc	cgtgaaggga	gggagtgtgt	gtctgtttta	5940
tccttatagc	agttagaacca	gaaacacagt	tggcgccctga	taaatgtttg	agctgaatgg	6000
agtctcccaa	attaaaagtt	tttcttggtc	gggtgcggtg	gctcatgcct	gtaatcccag	6060
cactttggga	ggctgagggt	gacagatcat	gaggctcagga	gttcgagact	agcccggcca	6120
acacagtga	accctgtctc	tactaaaaat	gcaaaaaatta	aggccgggca	tgggtggctca	6180
cgctgtaaat	cccagctagt	caggagtctg	aggcaggaga	aacgcttgaa	cctgggtggg	6240
ggaagttgca	gtgagctgag	atcgtgccat	tgtactccag	cccagggtgac	agtacaagac	6300
tccatctcaa	aaaaaagaaa	atacaaaaat	acaaaaatga	gccgggcgtg	gtggcacacg	6360
cccagatgcc	cagctactcg	ggaggctgag	acaggagaa	cacttgaaac	tgaggaggcag	6420
aggttgagct	gagcagagat	gggggcactg	cactctagcc	tgggtgacag	agcgagactg	6480
tctcaaaaaa	aaaaaaat	aaaagttttt	cccagagacc	cgtagctgc	tcctccagggt	6540
gccctggcct	gccggctggt	tgtgatgcc	attttgatga	ctccttctct	ctctgtgtgt	6600
tgtgtgactg	gggttatttc	tgggctgttg	atgtgcattt	ctatttttat	actggggaca	6660
cagcctcagg	tgtgtccagt	tggaggtgcc	agctgatacc	aagaggggcc	tgtctgcctt	6720
cactgtctct	ctgacctggt	tagattttca	cccagcgcat	aactgctttg	gctttccaga	6780
acagttttct	gcattttgct	gtttgataat	ttatttttag	tagcaacaag	ctactttgct	6840
atgtgggtcat	tgggataatc	tacaaattgc	cctggagaga	atgggcctcc	aggacctgtt	6900
atctgggtca	gttgtgggga	tcctgtcagc	ttcagtggtc	gatattctaag	tgggcaagtg	6960
ggactcagga	ccaccagaaa	ctccagggtc	ctgtgttttg	ggggcacatt	tgtttcttca	7020
gtgtgtggcg	aggccagagc	aaggttccca	gcctcgcaca	gaggcacaag	gcttttctcc	7080
tggataaagg	tgtctccctt	ggcccatcac	cctgttccca	tcattttctt	aggccttgac	7140

aaccctcttc	ccacaggaga	tgggtgcagca	gctgtgtact	gagccctgag	gcgggggtctg	7200
tcctgtctgg	ttctgttttg	cactgcagct	acagaaacta	tgagatcacg	tgtgtgggtgt	7260
tagaagctgc	tgagtcctgt	gtaatttatt	acacagttct	agaaaactaa	taggctgggt	7320
gcagtggctc	acacctataa	tcccagcact	ttgggaggct	aaggcaggag	gacgccttga	7380
gccagggagt	ttgagaccag	catgagcaca	tagtgtggcc	ctgtccctac	aaaataaata	7440
aacaaataaa	taaataaatt	agccagacct	ggtggtgcct	gcctagctgt	tcaggagggt	7500
gaggtaaag	gatcacttga	gcccaggagg	ttatggctac	agttagctat	gatctcctca	7560
ctgtgctgca	gcctgggcaa	cagagtga	ccctgtctca	aaaaagaaga	agaaagaaaa	7620
gtaagaaagg	gctgttaggg	atcttaagtc	agtagctggt	ggtccatgtc	ctatgtcatg	7680
gcgcttagga	atttgcctgg	caagccctga	gccttgtggc	tgcagtctga	cagttgatac	7740
agccctgggg	tactggggagg	tcataggagc	atgggtcatt	cccttcctcc	atggaggatg	7800
tgcttggagg	ttggctggct	gctgtgtcca	atgcgcagag	gaagcgggac	ccaattatac	7860
ctacctgggg	ccacacaagg	ccttcctcct	gtctctcccc	accagctccc	atcatttctc	7920
tgggccttgc	tccttctcct	acctgcctac	ccaccatac	agcagccctg	aggcatgggt	7980
cctttctag	gtttgttttt	gtttgtttgt	ttgttttttt	gagacagagt	ttcgctctta	8040
ttgccaggc	tggagtgcag	tggcgcaatc	tcggctcact	acacctctgc	ctcccagget	8100
caagcacttc	tcctgcctca	gactccggat	aactgggatt	acaggtacac	gtcaccatgc	8160
ctgggttaatt	tttgtgtttt	tagtagagat	ggggtttcac	cctgttggcc	aggctggtct	8220
cgaactccta	acctcaagt	atccacgtgc	ctcagccttc	caaagtgtcg	agattatagg	8280
cgtgagcccc	tgtgcctggc	ctagtgtgtt	ttgttttgtt	tttttttttt	ttttgagaca	8340
gggtcttact	ttgctgcccc	ggctgggtgt	cagtggcatg	atcacggctc	actgcagcct	8400
caatatccca	ggtgcaagtc	atcctcctgc	ctcagccttc	caagtagctg	ggaccacagg	8460
cctgcaccac	catgcctggc	taatttttta	tttttagtag	caacaaggcc	tcactgtatt	8520
gcccaggctg	gccttgaact	cctggcctca	agcattcttc	ccaccttggc	cttgcaaat	8580
gttggaaacta	caggtgtcag	ccactgcacc	cgccccctgt	ctggttctgt	tgtgtactgc	8640
actcaccacc	tccttcacct	gggatacggt	gggctggcag	gagctggatg	caaggagatg	8700
gagcgatgga	aagctgaaag	agggtagact	gcctcttggg	gtccagtgtg	aagttcacgg	8760
cagaatcagg	actggtactt	ccttcctcca	accagggtcca	agaccctcat	tctagagttag	8820
ggtcacgggg	gagaggggaa	tgttgctttg	acaggggtcc	tggggctcagt	atgtggagta	8880
agtatgcctt	ggtgggggtc	tcatttggat	gtaattactc	tgatctgtgc	tttttatttt	8940
tatttatctta	tatttatctta	tatttatctta	tttttgagac	agagtcttgc	9000	
tctgtcgccc	aggctggagt	gcagtgtgtg	gactctcagc	cactacaacc	tccgtgtcac	9060
agggtcaagc	gatttctcct	cctcagcctc	ctgagttagc	gggattacag	tcgcctccca	9120
cgacacccgg	ctgattttgt	atcttttagta	gagatgggg	ttcgccatgt	ttgtcaggct	9180
ggtctcaaac	tcctcactca	ggtgacctgc	cagcctcagc	ctcccaaagt	gctgggatta	9240
acaggcgtga	gccactgcac	ctgggcaatt	tttgtatttt	tagtagagac	aggggtttcac	9300
cataattggc	aggctggttt	caaactcctg	acctcaagt	atcctccac	ctcagcctcc	9360
ctaagtgtcg	ggattacagg	tgatctgtgc	tttatcaacc	tgctttgtta	cttttcggtc	9420
tctcttatcc	atctgaccaa	acctgggcat	gagaaggagg	tatgactcag	gacatgatgc	9480
actgttggga	cacaccaagc	tcagtgtccc	ctccgggtca	ctggctcaat	atcctctcac	9540
aacaggctgg	tttacaacaa	aacatccagg	gccacccagt	ttcctgatgg	tgtggatgta	9600
cgtgtccctg	gcttggggaa	gaccttctca	ctggagttcc	tggacccag	caaaagcagc	9660
gtgggtatgt	agcccttact	caaggcctcc	gggagctggg	atgggggttc	tgccggactg	9720
gagctggagc	tggaggaact	ctgctggttt	gtagggacag	cctgtgagct	gtctctgatc	9780
agcgtgggca	cagagccctg	tagcattctt	ccaaggacct	gctagctgtc	acagcttcca	9840
tgctgggcat	agtgtagggt	gccggcacta	gctgtatctt	ttcttatcct	ctgtatttct	9900
gtctacagg	tcctatttcc	acaccatggt	ggagagcctt	gtgggctggg	gctacacacg	9960
gggtgaggat	gtccgagggg	ctccctatga	ctggcgccga	gccccaaagt	agcaggcact	10020
ctcattccct	ccctgacgtc	tcgggagggt	gggggtgagg	gatcatgggc	accacagacc	10080
ttgggctctc	cccttgctct	tggctgtctc	ctgtccctgg	gcctctggca	tccagcttag	10140
tggtcacagc	caccaccttt	ggtcagtctt	atcctgtcct	ccatttccca	ccctgggacc	10200
tctgggcctg	tgagccctgg	ggagaaatat	aaggcttctt	cccttcatgg	aaggcggggg	10260
gaccacagacc	gctctgtttg	aatgtgagca	ccctcccttc	ccctctctgt	cttgtgtctg	10320
gcctgagaaa	agctcagtgg	ttccggctcc	aggaccttcc	ccacctgacc	cctgcctggc	10380
tctggcctgc	agatgaaaac	gggccttact	tcctggccct	ccgcgagatg	atcgaggaga	10440
tgtaccagct	gtatgggggc	cqcggtgtgc	tggttgcccc	cagtatgggc	aacatgtaca	10500
cgctctactt	tctgcagcgg	cagccgcagg	cctggaagga	caagtatac	cgggccttcg	10560
tgtacttggg	tcgcgcctgg	ggggcgctgg	ccaagacctt	gcgcgtcctg	gcttcaggta	10620
agaccctacc	tggcccagcg	tggggggctg	ttgccaggaa	ttctgccctc	tccttccctt	10680
ctaagtgtcc	tcctgggcca	gcctgcctcg	tgtctgtccc	acgggtgtgtg	gggtctatgc	10740
aaatctaccc	ctaaaagtcc	aaagaagaaa	gaggctgaca	aatctagttt	ctcagagaaa	10800

agcatttaaat	agggacatac	gaatagaagc	cacatctgtg	tctcaggtgg	gggcaagaca	10860
agatgggtgga	tccccacact	attagccccc	agaccagag	cttatattct	gtagggaaag	10920
ggcgactccg	atgcgatgtg	ttgaacattg	aaggatgata	acacagaggc	tgttttgatt	10980
tatggttaag	tacgtgcaca	agaacagta	gataaagtgg	aaatctcagt	ggccttcctg	11040
gatctggggg	taatcagaag	ccaacatggt	ggattagtat	ccaaaatgga	gttgctttgg	11100
tctccacaat	gactattctc	ttgggtcagc	cctgtttttt	ttttaatttt	tattttttga	11160
gacagagtct	ggttctgtca	cccagactgg	aatgcagtgg	tgcaatcttg	tctcactgca	11220
acctctgcct	cccgggttca	agcgattctg	cctcagcctc	ctgagtagct	gggattacag	11280
gtgcccgcca	ccatgcctgg	ctaagttttg	tggttttagta	gagatgaggt	ttcatcatgt	11340
tggccaggct	ggtcttgaac	tcctgacctc	agatgttcca	ctcgcttcgg	cctcccaaag	11400
tgctggggat	acaagtgtga	gccactgtgc	ctggccatcc	ctccctctta	ccccatcctt	11460
actcttccat	accgcacctt	accgcagagg	aggaaggtta	gagcattttt	tttttttttt	11520
tggaggcagg	gtctttctca	ctctgccatc	cagggtggag	tgacagtagc	tgatttttgt	11580
tcacatgaacc	tccaccttcc	aggttcaagt	gattctcctg	cctcagcctc	ccgggtaact	11640
gggactacag	gcgcgtacca	ccacaccggg	ctaatttttg	tatttttagt	agagactggg	11700
tttactatg	ttggccgggg	tagtctctaa	ctcctgacct	caagtcagga	ggatctgcct	11760
gcctcagcct	cccaaagtgc	tgggattaca	agcatgaacc	accgcaccgg	gccagatttt	11820
tttgatattt	tagtagagat	ggggtttcac	cattttggtc	aggctgggtc	tgaactcctg	11880
acctcaaatg	atctgcocac	cttgaccctc	caaagtctcg	ggattacaag	gatgagccac	11940
tgcacctggc	ctctagacta	cagtttttta	tttatgagtt	gcgcctccat	ctgtgggcag	12000
cacggagcct	ctgtaggcaa	cacagggagg	aagcagggtg	agatctggct	gggcctgctt	12060
gcctggcaat	tgggaaagcc	acccctttta	tggctcctcc	cccgtctttt	catgactgtt	12120
gcagctcacc	agctgcagct	gtagagtaga	gcttcttctc	ctagaaggga	gcttttctcc	12180
ctctgctagg	acttggggga	ggcttatgga	ccctcacttt	gggagctatg	agccagggtc	12240
gtgccaaagc	cttcatgagc	tcaagtgcct	gccactgctt	gacctgcttg	gtctactggc	12300
attgtgattg	ggtcaggccc	agtactctg	agttggctgg	aagacactca	gatttagtga	12360
ggactcatta	tagccaccac	ttcgggtctg	cctgggcctg	gagggacgga	tgtgggcata	12420
ccctgagttt	agacaggtag	ccccggcccc	tttcagagtt	tctctgtgag	tccccctaga	12480
gctttgtttc	aaaggctggg	aagctgttct	gtcctgcctt	ggcagtcacg	gactgggtgt	12540
gtgggtgcgg	gaggtggaag	tccgtgcacc	cctaggggct	ttccttgcct	caggggtccc	12600
ccagccaggc	cacagcaggc	agagctgagg	ccctacagtc	agtctgagag	gcctccctgc	12660
tttcagatac	aggggtgggg	gatgggtgac	catggatcct	gaacaggcca	gaggccctcg	12720
ttcccaagtt	gcagctttta	cttcctggag	gcctccctga	ctgccgggtg	tttgtgttgt	12780
tcacattcct	gtgtataggg	actccgcctc	catctgcagc	ctccccctcg	gccctgtctc	12840
cagcacgcct	ggctgccag	gtcagcgcac	atgcaagtgg	gtggaatgag	gccacggctg	12900
gctgaacgct	ggtctgagct	taggaaaaga	aaaactggta	cacagttcac	tgtcataaaa	12960
gggaaagcag	aacatgtcat	ctccgagttg	ccaacctgct	gactcacttt	agactaggtc	13020
agtgcccaca	ggcctgatca	gcacttggag	cttggttagag	tttacaggca	aggaagcatc	13080
ataaatcacc	ctgtgggtat	gtggccgctt	actccctggg	gaggaaagca	aaaaaaacaa	13140
aacatagctt	ggatgtgtgg	ttcccagatg	tagcaaaaat	aaagagaaac	aataaaagcc	13200
aaggcaagca	aactgggcaa	catagcaaga	ccccatctgt	ataaaaagtg	gaaacatttt	13260
tagcccaggc	gtgggtggac	gtgcttgtag	ttccagctat	gcaggaggct	gacataggag	13320
gatcacttga	acccaggagg	tggaggttgt	agttagccaa	gactgtacca	ctgcactcca	13380
gcctgggtga	cagaatgaga	ccctacttca	aaaaaaaaaa	aaaggaaaaa	tttgccaggc	13440
atgaggcatg	gtgggcata	cctgtagtcc	cagctactcc	aaaggctgag	gcggggaggt	13500
tgggtgagcc	tgagaggttg	aggctgctgt	gagccgtgat	catgccatta	tactccagcc	13560
tgggcaacag	agttagaccc	tgtctcaaaa	agaaaaaaa	agagccaagg	cagggatggg	13620
agtcacagtg	attacaatga	tgataaccgg	gtagagatgc	gggactgtgg	actgggcccc	13680
tggctggggg	ctggcagggg	cctggtgggt	aacatgctgc	ccaaccagct	ggcatttcta	13740
agcacagact	gaccagagcc	ttctccctgc	aggagacaac	aaccggatcc	cagtcactcg	13800
gcccctgaag	atccgggagc	agcagcggtc	agctgtctcc	accagctggc	tgctgcccta	13860
caactacaca	tggctcacctg	agaaggtggt	cgtgcagaca	cccacaatca	actacacact	13920
gcgggactac	cgcaagttct	tccaggacat	cggctttgaa	gatggctggc	tcacgaggca	13980
ggacacagaa	gggctgggtg	aagccacgat	gccacctggc	gtgcagctgc	actgcctcta	14040
tggtactggc	gtccccacac	cagactcctt	ctactatgag	agcttccctg	accgtgaccc	14100
taaaatctgc	tttgggtgac	gcgatggtac	tgtgaacttg	aagagtggcc	tgacgtgcca	14160
ggcctggcag	agccggcagg	agcaccaggt	gttgtctgag	gagctgccag	gcagcgagca	14220
catcgagatg	ctggccaacg	ccaccacct	ggcctatctg	aaacgtgtgc	tccttggggc	14280
ctgactcctg	tgccacagga	ctcctgtggc	tcggccgtgg	acctgtgtgt	ggcctctggg	14340
gctgtcatgg	cccacgcgtt	ttgcaaagtt	tgtgactcac	cattcaaggc	cccaggtctt	14400
ggactgtgaa	gcactctgcca	tggggaagtg	ctgtttgtta	tcctttctct	gtggcagtg	14460

agaaggaaga	aatgagagtc	tagactcaag	ggacactgga	tggcaagaat	gctgctgatg	14520
gtggaactgc	tgtgacctta	ggactggctc	cacagggtgg	actggctggg	ccctgggtccc	14580
agtcctctgc	tggggccatg	tgtccccctt	attcctgtgg	gcttttcata	cttgccctact	14640
gggcccctggc	cccgcagcct	tcctatgagg	gatgttactg	ggctgtgggc	ctgtaccag	14700
aggtcccagg	gatcggctcc	tggcccctcg	ggtgaccctt	cccacacacc	agccacagat	14760
aggcctgcca	ctggctcatg	gtagctagag	ctgctggcct	ccctgtggct	tagctgggtg	14820
ccagcctgac	tggcttcctg	ggcgagccta	gtagctcctg	caggcagggg	cagtttgttg	14880
cgttcttcgt	ggttcccagg	ccctgggaca	tctcactcca	ctcctacctc	ccttaccacc	14940
aggagcattc	aagctctgga	ttgggcagca	gatgtgcccc	cagtcccgca	ggctgtgttc	15000
caggggcccct	gatttcctcg	gatgtgctat	tggccccagg	actgaagctg	cctcccctca	15060
ccctgggact	gtggttccaa	ggatgagagc	aggggttgga	gccatggcct	tctgggaacc	15120
tatggagaaa	gggaatccaa	ggaagcagcc	aaggctgctc	gcagcttccc	tgaagctgcac	15180
ctcttgctaa	ccccaccatc	acactgccac	cctgccttag	ggtctcacta	gtaccaagtg	15240
ggtcagcaca	gggctgagga	tggggctcct	atccaccctg	gccagcacc	agcttagtgc	15300
tgggactagc	ccagaaactt	gaatgggacc	ctgagagagc	caggggtccc	ctgaggcccc	15360
cctaggggct	ttctgtctgc	cccagggtgc	tccatggatc	tccctgtggc	agcaggcatg	15420
gagagtcagg	gctgccttca	tggcagtagg	ctctaagtgg	gtgactggcc	acaggccgag	15480
aaaagggtac	agcctctagg	tggggttccc	aaagacgcct	tcacgctgga	ctgagctgct	15540
ctcccacagg	gtttctgtgc	agctggattt	tctctgttgc	atacatgcct	ggcatctgtc	15600
tccccttggt	cctgagtggc	cccacatggg	gctctgagca	ggctgtatct	ggattctggc	15660
aataaaagta	ctctggatgc	tgtaaagtg				15689

<210> 605

<211> 384

<212> DNA

<213> Homo sapiens

<400> 605

tatgggtgctg	gcatataacc	agctgtcagg	tctttgcccc	ctctgttcgc	ccctgcttcc	60
tggcgccagg	agtccatgtc	ctctctgggt	ccccagggtt	gcgagagtgg	agggggacca	120
cgagctcccc	atgcctctcc	tgtctgcag	gggaacttgc	agatggcccc	tggcgccagg	180
tcgagactca	agcccactcc	caaccccgcg	cccgaactgc	ccggactggc	ggggtgacgc	240
tgcactctgc	gcccctaaaa	cgaacagatt	aaacccctctc	ttgggaactg	aacatgctga	300
cctggcctct	cccgggtccc	cccgcactct	taaccccggg	gcagagttac	aggggctgac	360
tggccgcacc	cagggtgccct	cggg				384

<210> 606

<211> 3871

<212> DNA

<213> Homo sapiens

<400> 606

gaggcaggac	cttgtcctat	tcattaatct	tgcccctcaa	cagttatttt	cagaggggca	60
agaagtgttt	cagggttctt	ggcccttggt	tgaccagtgc	tcctaaccct	catgtcttgg	120
gtcattgttg	ttataatctg	gggttaacct	ttggaaggtc	atgggggtacc	cttttgcaaa	180
agttatgggc	cctctccttg	gaaactgcac	acacaccatg	cagcttacia	ttcagggagt	240
tcacaggtct	acagaatcct	ggaaactctc	atgtccgggt	ctactcattg	tagcttcagt	300
ggaaccttct	agcagtcctt	tccagctcct	ccccagctcc	tcagctctgc	ttccctccgc	360
ccatcaagcc	ctcctcagcc	cataagggtg	gccagggtggc	ctgtggggat	aaatcagagt	420
gccacacaagt	gcagggggccc	aaagacatcc	cagagcaaac	ccaagaatcc	ctctacaagc	480
cccagcccac	tcagaaggat	gcattttgcc	ccctctgttt	atttgtttgt	ttttaattat	540
gaaagtaggg	catggtcatt	gttgaaaatg	tgagaaatgc	agagaagtta	aaatgatgct	600
ttttgttttag	ggcgctgctg	cttctggcct	aagatcctaa	atcaaagcag	ctgccagatc	660
tggacctaa	acttgcttcc	catcacctta	cataaaagaa	agagcactgg	actaggaatc	720
aaagatctga	attcccacat	aatctctgct	attactagct	tttatctcta	tttattttatt	780
tatctgtcta	tctatctagt	accttttgtg	aatatgagtg	tttctcaccg	aggccctccc	840
atctctcttg	ccccgatcc	tggaatggac	caaatacctt	gtttactgaa	ggataacagat	900
ggcatgtgac	tcttgagaat	cactcaccct	cttagagcca	tggtttcctc	ttctataaaa	960
tagggatgtt	cgtgcctatt	tgctaatacat	gagtgacaat	gacataaggt	acataaagct	1020
gtactgcatg	atgcaaacat	aacatcataat	ttgtagggtt	gttgctaata	atactatcca	1080
tcagcaaagc	agtcattcat	ttactcagtc	aaatactgat	gcactgggtac	attcagtttc	1140

ctcttttgtg	aaatggggat	aaaaatagga	cttagctcat	agggtattta	agattcagtg	1200
agttaatat	tataaaatac	ttagagcagt	ccttggaaca	tattaagaac	tcaatacata	1260
ttagctagtt	gagcaggctg	tagtatttgt	tccagccaag	aaaagactgt	tctctaacag	1320
cacaggaaat	aaagatgggg	ttaggcacga	cacggcagca	ggacttacct	tctgtcta	1380
tcagctggca	gtcaaagaaa	gaattattag	aagcctatga	gcttggtctc	ccaaagatct	1440
actgagtaca	gggggatatt	taaagaataa	aaatccctag	accacttac	agtacaggag	1500
agacaagaag	ctgttcacac	aataacaagt	gctaaattcc	ttgattttta	tactgacagc	1560
tgaagtttta	gagaagagaa	ggatcaataa	agaccggaat	attaaagcag	acaggcctaa	1620
aagaggattt	tagatttgat	aaagaattcc	tccagttctc	agagcaggga	ctttggaggg	1680
taacaacttg	gatttcagtc	cttgccctgc	acttactgat	tgtatgacct	tggaaaagtt	1740
acttcacttc	tgtgagcaat	gattctctca	tctggaaaac	aaaacaaaac	aaaaaaacta	1800
acaagggtga	taataatacc	tacctcccta	ctgataggg	ctgatgagaa	gattaaaaag	1860
tacctacata	aagcccttct	ctgcgtgcct	ggagcatggc	aagggtccca	tgtgaaccac	1920
tatttttttt	tttttttttt	aatgaaaagt	catgggcagc	accaaagctc	agaattttgg	1980
cagtaaggaa	ttatgattct	acattgaaat	ttgccagaag	gggagctgac	tgcctcatga	2040
gacatttttg	aatgaggcca	aaaaaggaaa	caagtgtatc	ctgggatttt	acgagatgct	2100
aggtatgtcc	ttagcactta	atcctcatga	ctaccctatg	atgtaagtac	tatctgttgt	2160
ccctatttta	cagttggcca	aggtcacata	gctgaaacgg	acttctgtgt	gtcttcta	2220
ttttgctttc	aggtctggaa	aaatgcaatg	taaacctaga	ccctctttga	aatactgaag	2280
atggtaatct	tatcccttcc	tcaactttctg	ttttctaaaa	taacagtcct	tgttccttac	2340
aatgtctgtt	ttccagattc	ttagaagact	ttttgcttat	tttccataac	tctttacttg	2400
tgtaccctga	atgacaccgg	gggtatagca	gagaatgtcc	atttccctca	agttcaaagg	2460
tctacaaaa	aatagttgct	agcctggcat	gatgggtgtg	gcctgtagcc	tcagctacct	2520
gggaggctga	ggcaagagga	ttgcttgagc	tgaggagtgt	gaggctgcag	cgagccatga	2580
tcacgccact	gctctccagc	ctggatgaca	aagcaagatc	acatcttaaa	ataaaataaa	2640
ataaatttta	aaaatatata	aaaaataaaa	agtgggtgcca	ctaagtgtcc	tggacagcat	2700
tagagaaagc	aagagataga	agagtgcata	cacctgaaag	gaaagagatg	cgggtcttcc	2760
cttcccttg	agtagccacc	ggctatccct	ggagcatagg	agtaggattt	tatccccag	2820
cttcggcctc	cccaggcagc	acttcccttc	tgtgctttga	ctccaatttg	gatggtgctc	2880
aggcggaag	taggctgggg	tgggaggagt	ttaggggaat	atttgtcttc	tctcctgttt	2940
tgccttagag	attctggcca	ggaagacaaa	tggctagtac	cacttggctc	ttttcttttc	3000
ttcttttgag	acagggctct	gttctgttgc	ccaggctgga	gtgcagtggc	gtgatcgcg	3060
ctcaccgcag	cctcccaggc	tcaagcattc	ctctcacctc	agcctcctga	gtagctggga	3120
ccacagctcc	actaattttg	aagttttttt	ggtagacatg	aagtctccct	gtgttgccc	3180
ggctgggtct	aaactcctga	cctcaagcag	tctcctgtc	ttggcctctg	gaaatgctgg	3240
gattacaggc	gtgagccact	gtgctggcct	cttttttctt	tttctttttt	tttaagggtt	3300
ttatttggtt	aatgggaagt	ctgtgccatc	aactgagcat	tgtattttct	ccttagtaag	3360
agcctgggtg	ggccactggg	agagaactat	acattaaatg	taagtgcct	ctgggtagag	3420
agccctgggc	tgggttccct	tcttttctct	cttttctct	actttggtgt	ctggagcat	3480
ttcccagact	ccagtttctt	accaccctca	cggattttgc	tattgtatta	tcacctcctt	3540
tatcattccc	aaaattgact	ttatggagac	tcattaaaag	aaaaaatcat	cggccgggag	3600
cgttggtcca	gcgcacgaag	gcgggcgaat	cacctgaggt	gcggagttcg	tgaccagcct	3660
gaccaaaaca	gagaaacccc	atctctacta	aacaatacaa	aattagctgg	gcgtggtggt	3720
gcacgcctgt	aatcccagct	actggggagg	ctgagacaag	agaatcactt	gaacccggga	3780
ggcagagggt	gcagtgaacca	aagatcgcac	tattgcactc	cagcctgggc	aacaagagca	3840
aaactctatc	tcaaaaaaaa	aaaaaaaaaa	a			3871

<210> 607

<211> 3872

<212> DNA

<213> Homo sapiens

<400> 607

gaggcaggac	cttgtcctat	tcattaatct	tgccccctca	cagttatttt	cagaggggca	60
agaagtgttt	cagggttctt	ggcccttgtt	tgaccagtcg	tcctaaccct	catgtcttgg	120
gtcattgttg	ttataatctg	gggttacctt	ttggaaggtc	atgggggtacc	cttttgcaaa	180
agttatgggc	cctctccttg	gaaactgcac	acacaccatg	cagcttacaa	ttcaggaggt	240
tcacaggtct	acagaatcct	ggaaactctc	atgtccggtt	ctactcattg	tagcttcagt	300
ggaaccttct	agcagtcctt	tccagctcct	ccccagctcc	tcagctctgc	ttccctccgc	360
ccatcaagcc	ctcctcagcc	cataaggtgg	gccaggtggc	ctgtggggat	aaatcagagt	420
gccacaagt	gcagggggcc	aaagacatcc	cagagcaaac	ccaagaatcc	ctctacaagc	480

cccagcccac	tcagaaggat	gcattttgcc	ccctctgttt	atttgtttgt	ttttaattat	540
gaaagtaggg	catgggcatt	gttgagaatg	tgagaaatgc	agagaagtta	aaatgatgct	600
ttttgtttag	ggcgctgctg	cttctggcct	aagatccctaa	atcaaagcag	ctgccagatc	660
tggacctaag	acttgcttcc	catcacctta	cataaaagaa	agagcactgg	actaggaatc	720
aaagatctga	attcccatca	aatctctgct	attactagct	tttatctcta	tttattttatt	780
tatctgtcta	tctatctagt	acctttttgtg	aatatgagt	tttctcaccg	aggccctccc	840
atctctcttg	ccccgcattc	tggaaatggac	caaatacctt	gtttactgaa	ggatacagat	900
ggcatgtgac	tgttgagaat	cactcaccct	cttagagcca	tggtttcctc	ttctataaaa	960
tagggatggt	cgtgcctatt	tgctaatacat	gagtgcacat	gacataaggt	acataaagct	1020
gtactgcatg	atgcaaacat	aacatcatat	ttgtagggtt	gttgctaata	atactatcca	1080
tcagcaagaag	agtcattcat	ttactcagtc	aaatactgat	gcactgggtac	attcagtttc	1140
ctcttttgta	aaatggggat	aaaaatagga	cttagctcat	aggggtattta	agattcagtg	1200
agttaataata	tataaaatac	ttagagcagt	ccttggaaca	tattaagaac	tcaatacata	1260
ttagctagtt	gagcaggctg	tagtattttgt	tccagccaag	aaaagactgt	tctctaacag	1320
cacaggaat	aaagatgggg	ttaggcacga	cacggcagca	ggacttacct	tctgtctaata	1380
tcagctggca	gtcaaagaaa	gaattatttag	aagcctatga	gcttggttctc	caaagatct	1440
actgagtaca	gggggataat	taaagaataa	aaatccctag	accacattac	agtacaggag	1500
agacaagaag	ctgttcacac	aataacaagt	gctaaattcc	ttgattttta	tactgacagc	1560
tgaagtttta	gagaagagaa	ggatcaataa	agacgggaat	attaaagcag	acaggcctaa	1620
aagaggattt	tagatttgat	aaagaattcc	tccagttctc	agagcaggga	ctttggagggg	1680
taacaacttg	gatttcagtc	cttgccctgcc	acttactgat	tgtatgacct	tggaaaagtt	1740
acttcaactc	tgtgagcaat	gattctctca	tctggaaaac	aaaacaaaac	aaaaaaacta	1800
acaaggggtga	taataataacc	tacctcccta	cctcataggg	ctgatgagaa	gattaaaaag	1860
tacctacata	aagcccttct	ctgcgtgcct	ggagcatggc	aagggtctca	tgtgaaccac	1920
tatttttttt	ttttttttta	atgaaaagtc	atgggcagca	ccaaagctca	gaattttggc	1980
agtaaggaat	tatgattcta	cattgaaatt	tgccagaagg	ggagctgact	gcctcatgag	2040
acatttttga	atgaggccaa	aaaaggaaac	aagtgtatcc	tgggattttta	cgagatgcta	2100
ggatgtcct	tagcacttaa	tcctcatgac	tacctatga	tgtaaagtact	atctgttgtc	2160
cctattttac	agttggccaa	ggtcacatag	ctgaaacgga	cttctgtgtg	tcttctaact	2220
tttgctttta	ggtctggaaa	aatgcaatgt	aaacctagac	cctctttgaa	atactgaaga	2280
tggtaaatctt	atcccttcc	cactttctgt	tttctaaaat	aacagtcctt	gttctttaca	2340
atgtctgttt	tccagattct	tagaagactt	tttgcttatt	ttccataact	ctttacttgt	2400
gatccctgaa	tgacaccggg	ggtatagcag	agaatgtcca	tttctcaaaa	gttcaaagggt	2460
cctacaaaaa	atagttgcta	gcctggcatg	atggtgtgtg	cctgtagcct	cagctacctg	2520
ggaggctgag	gcaagaggat	tgcttgagct	gaggagtttg	aggctgcagc	gagccatgat	2580
cacgccactg	ctctccagcc	tggatgacaa	agcaagatca	catcttaaaa	taaaataaaa	2640
taaattttaa	aaatatataa	aaaataaaaa	tgggtgccac	taagtgtcct	ggacagcatt	2700
agagaaagca	agagatagaa	gagtgcacaa	acctgaaaag	aaagagatgc	gggtcttccc	2760
tctcccttga	gtagccaccg	gctatccctg	gagcatagga	gtaggatttt	atcccccagc	2820
ttcgccctcc	ccaggcagca	cttcccttct	gtgctttgac	tccaatttgg	atggtgctca	2880
ggcgggaagt	aggctggggg	gggaggaggt	taggggaata	tttgtcttct	ctcctgtttt	2940
gccctagaga	ttctggccag	gaagacaaa	ggctagtacc	acttgggtcct	tttcttttct	3000
tcttttgaga	caggggtctg	ttctgttgcc	caggctggag	tgcagtggcg	tgatcgccgc	3060
tcaccgcagc	ctcccaggct	caagcattcc	tctcacctca	gcctcctgag	tagctgggac	3120
cacagctcca	ctaattttga	agtttttttg	gtagacatga	agtctccctg	tgttgcccg	3180
gctggtctca	aactcctgac	ctcaagcagt	cctcctgtct	tggcctctgg	aaatgctggg	3240
attacaggcg	tgagccactg	tgctggcctc	ttttttcttt	ttcttttttt	ttaaggtttt	3300
tatttgttaa	atgggaagtc	tgtgccatca	actgagcatt	gtattttctc	cttagtaaga	3360
gcctgggtgg	gccactggga	gagaactata	cattaaatgt	aagtagcctc	tgggtagaga	3420
gccctgggct	ggtttctctt	ctttctctc	cttttctcta	ctttgggtgtc	tggaggcatt	3480
tcccagactc	cagttttcta	ccaccctcac	ggattttgct	attgtattat	cacctccttt	3540
atcattccca	aaattgactt	tatggagact	cattaaaaga	aaaaatcatc	ggccggggagc	3600
ggtggctcac	gccacgaagg	cgggcgaatc	acctgagggtg	cggagtctgt	gaccagcctg	3660
acaaaaacag	agaaacccca	tctctactaa	acaatacaaa	attagctggg	cgtgggtggg	3720
cacgcctgta	atcccagcta	ctggggaggc	tgagacaaga	gaatcacttg	aacccgggag	3780
gcagagggtg	cagtgaccaa	agatcgcaat	attgcactcc	agcctgggca	acaagagcaa	3840
aactctatct	caaaaaaaaa	aaaaaaaaaa	ag			3872

<210> 608

<211> 280

<212> DNA

<213> Homo sapiens

<400> 608

tcacgcctgt	aatcctagca	ctttgggagg	cggaggcagg	cggatcacct	gaggtcggga	60
gttcgagacc	agcctgacca	acatggagaa	accccgctctc	tactaacaat	acaaaaaaat	120
tagccgagca	tgggtggcgca	tgccataaat	ctcagctact	tgggaggctg	aggcaggaga	180
atcgcttgaa	cctgggaggc	ggaggttgca	gtgagccgag	atcgcgccat	tgcaactccag	240
cctgggcaac	aaaagcgaaa	ctcgtgtctca	aaaaaaaaaa			280

<210> 609

<211> 6654

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (554)..(554)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (640)..(640)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (650)..(650)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (953)..(953)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (1019)..(1019)

<223> n equals a,t,g, or c

<400> 609

gaaactgtct	tctactgact	gtttcaaaac	cgaggccttc	acatccccgg	aggccctgca	60
gcctgggggg	actgccctgg	cgcctaagaa	gaggagccgg	aaaggccggg	cagggggccca	120
tggactctcc	aaaggcccgc	tggagaagcg	gccctatctt	ggccccggctc	tgctcctgac	180
tccccgagac	agggccagtg	gcacacaagg	ggccagtgag	gacaactctg	gtggaggagg	240
caagaagcca	aagatggagg	agctgggcct	ggcctoccag	cccccgaggg	gcaggccctg	300
ccagccccag	acaagggcac	agaaacagcc	aggccacacc	aactacagca	gctattccaa	360
gcggaagcgc	ctcactcggg	gccgggccaa	gaacaccacc	tcttcaccct	gtaaggggcg	420
tgccaagcga	cgacgacagc	agcaggtgct	gcccttggat	cccgcagagc	ctgaaatccg	480
cctcaagtac	atttcctctt	gcaagcgget	gaggtcagac	agccggaccc	ccgccttctc	540
acccttcgtg	cggngtggag	aagcgagacg	cgttcaccac	catatgcact	gttgtcaact	600
cccttgagag	tgcgcccaag	ccccacagga	agccttccctn	ctctgcaten	tcttccctcat	660
cctcgtcatc	gtttctcctg	gatgcagccg	ggcgctccct	ggccacactc	cctggaggct	720
ccatcctgca	gccgcggccc	tccttgcccc	tctctccac	gatgcacttg	gggcctgtgg	780
tttccaaggc	cctgagtacc	tcttgcttg	tttgctgctt	ctgccaaaac	ccggccaact	840
tcaaggacct	tggggacctc	tgtgggacct	actaccctga	acactgcctc	cccaaaaaga	900
agccaaaact	caaggagaag	gtgcgccag	aaggcacctg	tgaggaggcc	tcngctgccg	960
cttgagagaa	cactcaaagg	tcccagtggt	gcagctgccg	ccactgccgg	gaagcccnc	1020
caggcctgac	ggcccagctg	acccggccaa	gcagggccca	ctgcgcacca	gtgcccgggg	1080
cctgtcccg	aggctgcaga	gctgctactg	ctgtgatggc	cgggagggatg	ggggcgaggga	1140
ggcagcccca	gccgacaagg	gtcgcaaaaca	tgagtgcagc	aaggaggctc	cggcagagcc	1200
cggcggggag	gcccaggagc	actgggtgca	tgaggcctgt	gccgtgtgga	ccggcgggcgt	1260

ctacctgggtg	gccgggaagc	tctttgggct	gcaggaggcc	atgaagggtg	ccgtggacat	1320
ggtaagaggc	cagcccagcc	agggtgggga	gtgtggggtt	ccaaaggaca	ggcaggcagg	1380
cagtcgggga	gccccttggt	tctagtgtct	cagtggtggc	caaatgtgtc	tgcagtctcg	1440
ggacaactctg	cagagtcctg	agcctctctg	gggtgtgtgg	gggaagtgga	ggcaccatc	1500
tggctaaggc	aggtcacact	cacctaccct	gtcccaggag	acttcccgcc	ggggccgta	1560
tggccagcca	ccgccactct	cccactcacc	tggcatcttc	aggctccagc	cccaccaga	1620
atccactggg	cccctcccca	tgtgtcacc	ggagatgcca	aggcccagag	aacacagga	1680
ctcccaagat	tgaacatcag	ggctgccccg	ggcgggtgca	gagcaagtgt	cccaccctct	1740
gttcctgtct	ccattgcctc	tgggatgaag	ctaagggtct	aggaagaccc	tctctggcga	1800
cacaggcttg	gtgcatggac	ccagtcacag	ggttcctccc	tctgcaggac	agtccatggg	1860
gtcacacagt	cacaacaggc	agggcggggc	agatccagac	cctctcacca	ttggctctga	1920
gaccagcttt	ggaagccata	gtcactgagc	accaacatga	gagagggaac	tctggggctg	1980
tggcccatg	cacctttggg	gctgtgacct	gcccctctctg	tgcctccgtc	ccctcgcccc	2040
taacgtgggt	atgaggggtg	ccatggagga	ggggctcgga	gggttaaaag	gtgggcacct	2100
ctgagccac	cgaacacagc	agccctgtga	tagtcagtgc	agaggggcct	ggtggctctg	2160
gtgacagcag	ggtgacgttc	tctgtggtgt	caccacttcc	ccagtacat	agagtacctc	2220
tgtgcccttc	tgagggaggg	gtcagtgggg	gcgggtgggt	gcacctctcc	ccgggggcca	2280
tgtctctgcc	cccacattca	accccgactc	cagtcctca	tccagacttc	cgtggagtga	2340
cgctccgggc	tctcagcgct	gtgtgggtgg	tctcagtggt	gacgcctgca	gccttctctg	2400
gcccctgccc	tgagtcccat	cccctccact	ccttccctca	acccactatg	tgcggctgag	2460
gtcacagggg	agccagaggg	gcttggcagg	ggctctccaga	ggccctggac	aaacactgcc	2520
tgcactctgag	tgattcagtg	accagacaca	gtggccccag	ccgggtggct	cgccccctcc	2580
cctgcccagc	ctcctccccc	gtcgtgcac	tgccacactg	ctcctcgag	tacaccctg	2640
cagccctctc	gagcagcccc	tgtctctgac	agttgcctg	gcattgcctg	gccaaccaa	2700
ggctccgggtg	ggggcccaact	gtgtttgcca	cccacgcctc	ctagtgtgtg	tcttgggcac	2760
ctgcttccca	ctgcccattg	ggatggctgg	agaccttctc	cacgcccaga	cgccctgccc	2820
acctcactcc	accctccacc	tcagaggaag	gctggccccg	acaggactcc	tgcaggttcc	2880
tgggtcccg	ggccttgctt	accagcaga	tgggtggcct	gggcctcttc	cctctccct	2940
tcccagttag	tgattttttg	cctctctctc	gctttctgtc	tctctctgtc	tctctctctc	3000
tctctctctc	tctctctctc	tctctctctc	tctctcatta	ctggctcctt	cccagcgcct	3060
tgaacacaggt	tcaagtctct	cccgtcatca	aaaaataata	accctcagat	caccagcccc	3120
agctggctgc	cacctccctt	gcttcacagc	cccatctctg	aaagccttgt	ccccacggca	3180
tcctcggtcc	cgcagcctca	ccaggggctc	cccgaactc	acgtcccacc	aggctgagat	3240
caggtcgtct	ccacatcccc	tgcagccagc	actggccggc	cgaagggagg	aggggtcagc	3300
cccagcacc	gaccacccca	tcctgtccct	ggcccatggg	tgtcttaacc	gcccattgac	3360
acacaagggtc	ctgctggact	gaggagacag	tgtgtgtttg	agaggcgcta	gcttccctac	3420
accacgcggg	ggctggaact	tgccagccca	gcccattgct	gtctgtgtgt	ccatgtcca	3480
gaaatggcct	tacaagcctg	gcaactagg	ctgccccggg	aaggctcgga	ccaggacac	3540
cctgccagac	agatgggaca	tcctgggaga	atgggcagag	tctggggcct	cccagggtca	3600
cttttggtct	accaccctt	cctgcctcag	tggcttgggg	gcgccatgct	ccttgagtg	3660
agaccctggt	tcaaatccca	gctctgccga	gggtgtgttc	catagctcca	ggcgagtac	3720
gcattgctctg	agaactccac	aatgtcaaac	cccggttagca	ggattgtggg	gttctgtgga	3780
tcattgtggga	cctgcctggc	atgtggaagg	ggcttggggg	gcagctgtgt	ccctggcccc	3840
agcattgccca	cacccctcgg	taccttgacc	tcacttttgc	gctctggagg	gcagaacctc	3900
tgagccagct	ctcagggata	ccttttttcc	tcgatggcct	tttctgggaa	ctgccctcgc	3960
ctgctatctc	tgagccctgc	ctgcccttcc	cccaaagcca	tcatagaccc	ctacctccta	4020
tccagatgga	gcctggccat	ggaatgcttg	gggtgagagg	gacccatagc	gggctccggg	4080
cattgttagg	gggctagggtg	gtgtctgcag	aggccccacc	tgtggcaggg	tttacatgcc	4140
gccaccctg	ccctcctctt	gggtagctgg	ggtcagaagg	gcctgaggcc	tcactctctc	4200
tgcactttag	tttcttcaca	tctaaaatgc	tattcatatg	cctgcctgag	gggtgggtggg	4260
gcctccgtgc	agtaagtggg	gagaagcctt	cagccagagg	acccccatat	gcttaaacat	4320
ccagacacca	agggccactc	acagacagca	gccggcttgt	gtttcgtcat	cccttttggg	4380
tcaggaaactg	gggacgtgg	actccagatc	tccaggaggc	catcccagac	tagggcgga	4440
ggaggcctca	gccctgagct	gaaaacctga	aattctagaa	taaaccacag	gccccactcc	4500
cagcatgggg	agcggggagg	ggagtgttct	gacatttctc	agctgctgtg	gttgggatgg	4560
tgcgccacc	ctgagcatgt	gggtcctgt	gggcccctac	tccagcctgg	aggcagctgc	4620
aggggtcaga	gaccagcctg	gagccctcgg	gcaggttact	cagcctcagc	tctcattggt	4680
aaccagggtg	aaataacagt	aatcccatca	taagggttgc	gtgggcatga	ggcttccagc	4740
catgcctggc	acataggaag	ctattgtcgt	ttgtttcact	ggcttcgcac	ttgggcagag	4800
gccgcccgc	tctctgtctg	cctctctacc	tcaccccccg	ccccagcac	ggtggcactg	4860
tggctctggc	gcctggtgac	ttctccctcc	ccggcctcag	gtttgcttca	ctcttccaag	4920

ggcctttcttg	gtgtgactgt	cctgtcctgg	ccacgtccac	tccaagcagc	tggtccaggt	4980
gtggggcagc	ccccaagctc	agcagaggac	agttttgaga	cttagaggag	gacggcatca	5040
gatttacatg	aagtcagcca	tctcaaggga	ttaccacgtc	accgcctcct	ctcacaggtc	5100
tgagagctgg	tcccctggag	ggtgcaggtc	tcatcctagg	tagaacagtc	ccagcctagc	5160
ttcaaagtgc	tctgtctgcc	agaaagggtg	gaaaaccatg	ctgaatgcct	tcactgttgc	5220
ctggaatggg	agcctcagtt	tcaccatctg	taaagtgaga	ttaatgaaag	ggaccacacg	5280
agggtctgta	gagccagtag	gcggccaggc	gcgggtggctc	acgcctgtaa	tcccagcact	5340
ttgggaggct	gaggtgggag	gatcacgagg	tcaggagatc	gagaccatcc	tggctaacac	5400
ggagaaaccc	cgtctctact	aaaaatacaa	aaaatttagcc	tggcgtgggtg	gcggggacct	5460
gtagtccag	ctactgggga	ggctgaggca	ggagaatggc	gtgaacccgg	gaggcggagc	5520
ttgcagttag	ccaagattgt	gccactgtct	tctagcctgg	gcaacagagc	aagactccat	5580
ctcaaaagca	aaagaaaaaa	gagccagtag	gccaggcgct	atgtcttaca	cctgtaatcc	5640
cagcactttg	ggaggcctag	gcaggcagat	cacctgaggt	cgggagttcg	agaccagcct	5700
ggccgacaca	gtgaaactcc	gtctctacta	aaaatacaaa	aattagctgg	gcatggcagc	5760
acatgcctgt	aatcccagct	actcgggagg	ctaaggcagg	agaatcactt	gaacacagga	5820
ggcagcgggt	gccgtgagcg	gagatcacac	cattgcactc	cagccccggg	gggacagagt	5880
gaaattctgt	ctcaaaaaaa	aaaaaaaaaa	aaaaaagcaa	gccagtgggc	aaggacacac	5940
accacgcccc	gcacaccaga	agcatgcagc	agatgtctgg	tggtagccac	agccatggta	6000
gtaaactggca	tctactggccc	aagggggtct	ccctacccaa	tgtaccagcc	cagagggtgc	6060
taaatagacc	atgtttgtgg	gcatgtgtac	cccagtgtctg	aacctccttc	tggtagattt	6120
tcaagcacca	ttttggagaa	gggaggcagg	gaccacaggg	ggccagccag	cctgtacagg	6180
ttttttgtgt	ttttttgtgt	tgtttgtttg	ttgttttttt	gaggcagggt	ctcactcttg	6240
cccaggtctg	agtacaggca	gtggcgctcat	ctcggctcac	tgcagcctca	acctcccagg	6300
ctgcagcaat	cctcccacct	caccttctctg	agtagctggg	actacaggca	cacaccacca	6360
accctcacta	ttttttgtag	agacagtttc	accatgttgc	ccaggctggg	atcaaatcc	6420
tggactcagg	cgatcctccc	accttggcct	cccagagtgc	tgggattaca	ggcatgagcc	6480
actgcacctg	gcctaccagc	ctgtaaagct	tgagggtctg	gctccaactg	gagactcacc	6540
tgcctttcct	ttctcttcat	cagatgtgtt	ccagctgcc	agaagccggg	gccaccattg	6600
ggtgtgccca	caaaggatgc	ctccacacct	accactaccc	gtgtgccagc	gatg	6654

<210> 610

<211> 6650

<212> DNA

<213> Homo sapiens

<400> 610

gaaactgtct	tctactgact	gtttcaaaac	cgaggccttc	acatccccgg	aggccctgca	60
gcctgggggg	actgccctgg	cgccaaagaa	gaggagccgg	aaaggccggg	cagggggcca	120
tggactctcc	aaaggcccgc	tggagaagcg	gccctatctt	ggcccggctc	tgctcctgac	180
tccccgagac	agggccagtg	gcacacaagg	ggccagtgag	gacaactctg	gtggaggagg	240
caagaagcca	aagatggagg	agctgggcct	ggcctccag	cccccgagg	gcaggccctg	300
ccagcccag	acaagggcac	agaaacagcc	aggccacacc	aactacagca	gctattccaa	360
gcggaagcgc	ctcactcggg	gccgggcca	gaacaccacc	tcttcacctc	gtaaggggcg	420
tgccaaagca	cgacgacagc	agcaggtgct	gcccttggat	cccgcagagc	ctgaaatccg	480
cctcaagtac	atttctcttt	gcaagcggct	gaggtcagac	agccggaccc	ccgccttctc	540
acccttcgtg	cgggttgaga	agcgagacgc	gttcaccacc	atatgcaactg	ttgtcaactc	600
ccctggagat	gcgcccagc	cccacaggaa	gccttctctc	tctgcctcct	cttctctatc	660
ctcgtcctcg	ttctccttgg	atgcagccgg	ggcctccctg	gccacactcc	ctggaggctc	720
catcctgcag	ccgcggccct	ccttgcctct	ctcctccacg	atgcacttgg	ggcctgtggt	780
ttccaaggcc	ctgagtacct	cttgccttgt	ttgctgcctc	tgccaaaacc	cggcccaactt	840
caaggacctt	ggggacctct	gtggggcccta	ctaccctgaa	cactgcctcc	ccaaaaagaa	900
gccaaaactc	aaggagaagg	tgcggccaga	aggcacctgt	gaggaggcct	cgctgccgct	960
tgagagaaca	ctcaaaggtc	ccgagtgtgc	agctgcgcgc	actgccggga	agccccccag	1020
gcctgacggc	ccagctgacc	cgcccaagca	gggcccactg	cgcaccagtg	cccggggcct	1080
gtcccggagg	ctgcagagct	gctactgctg	tgatggccgg	gaggatgggg	gcgaggaggc	1140
agccccagcc	gacaagggtc	gcaaaatga	gtgcagcaag	gaggctccgg	cagagcccgg	1200
cggggaggcc	caggagcact	gggtgcatga	ggcctgtgcc	gtgtggaccg	gcggcgctcta	1260
cctgggtggcc	gggaagctct	ttgggtgca	ggaggccatg	aaggtggccg	tggacatggt	1320
aagaggccag	cccagccagg	gtggggagtg	tggggttcca	aaggacaggc	aggcaggcag	1380
tgggggagcc	ccttgtttct	agtgtctadag	tgtgggcca	atgtgtctgc	agtctcggga	1440
caatctgcag	agtctgagc	ctctctgggg	tgtgtggggg	aagtggaggc	acccatctgg	1500

ctaaggcagg	tcacactcac	ctaccctgtc	ccaggagact	tcccgccggg	gcccgtatgc	1560
ccagccaccg	ccactctccc	actcacctgg	catcttcaag	ctccagcccc	acccagaatc	1620
caactggggccc	ctccccatgc	tgtcaccgga	gatgccaaag	cccagagaac	acgaggactc	1680
ccaagattga	acatcagggc	tgccccgggc	ggtgcaagag	caagttgccc	accctctgtt	1740
cctgtctcca	ttgacctctg	gatgaagcta	agggctcagg	aagaccctct	ctggcgacac	1800
aggcttgggtg	catggaccga	gtcacagggt	tcctccctct	gcaggacagt	ccatggggtc	1860
acacagtcac	aacaggcagg	gcggggcaga	tccagaccct	ctcaccattg	gctctgagac	1920
cagcttttga	agccatagtc	actgagcacc	aacatgagag	aggggaactct	ggggctgtgc	1980
gccatgcacc	tttggggctg	tgacctgccc	tctctgtgcc	tccgtccctt	cgccccctaac	2040
gtgggtatga	gggtgcccct	ggaggagggg	tcgggagggt	taaaagggtg	gcacctctga	2100
gccaccagag	cacagcagcc	ctgtgatagt	cagtgacag	gggcctggtg	gctctggtga	2160
cagcagggtg	acgttctctg	tggtgtcacc	acttccccag	taccatagag	tacctctgtg	2220
cccttctgag	ggaggggtca	gtgggggcgg	tggggtgcac	ctctcccccg	gggccatgct	2280
tctgccccca	cattcaaccc	cgactccact	gcctcatcca	gacttccgtg	gagtgcgct	2340
cccggctctc	agcgtctgtg	ggtggctctc	agtggggacg	cctgcagcct	tctctggccc	2400
ctgccctgag	tcccatcccc	tccactcctt	ccttcaaccc	actatgtgcg	gctgaggcca	2460
caggggagcc	agaggggctt	ggcaggggtc	tccagaggcc	ctggacaaac	actgcctgca	2520
tctgagtgat	tcagtgaccc	agcacagtgg	ccccagccgg	tggcttcgcc	cctccccctg	2580
cccagccctc	tcccccgctg	ctgcactgcc	cacctgctcc	tcgcagtaca	cccctgcagc	2640
ccctctgagc	agccccctgt	cctgacagtt	gccgtggcat	tgccctggcca	aaccaaggct	2700
ccggtggggg	cccactgtgt	ttgccaccca	cgccctcctag	tgtgtgtctt	gggcacctgc	2760
ttcccactgc	ccatggggat	ggctgggagc	cttctccacg	cccagacgcc	ctgcccacct	2820
cactccaccc	tccacctcag	aggaaggctg	gccccgacag	gactcctgca	ggttccctggt	2880
gccggggggc	ttgcttacct	agcagatggt	ggccttgggc	ctcttccctc	tccccctccc	2940
agttagtgat	tttttgccct	tctcctgctt	tctgtctctc	tctgtctctc	tctctctctc	3000
tctctctctc	tctctctctc	tctctctctc	tcattactgg	ctccttccca	gcgccttgaa	3060
acaggttcaa	gtctctcccc	tcataaaaa	ataataaccc	tcagatcacc	agccccagct	3120
ggctgccacc	tcccttgctt	cacagcccca	ttcctgaaag	ccttgtcccc	acggcatcct	3180
cggctcccga	gcctcaccag	gggctccccg	acactcacgt	cccaccaggc	tgagatcagg	3240
tcgtctccac	atccccctga	gccagcactg	gccggccgaa	gggaggaggg	gtcagccccg	3300
agcaccgacc	accccatcct	gtccctgggc	catgggtgtc	ttaaccgccc	atgcacacac	3360
aaggtcctgc	ttgactgagg	agacagtgtg	tgttggagag	gcgctagctt	ccctacacca	3420
cgcgggggct	ggaacttgcc	agcccagccc	atgcctgtct	gctgtgccat	gctccagaaa	3480
tggcctgaca	gcctgcgcaa	ctagggtgtc	cccgggaagg	tcggaaccag	gaacaccctg	3540
ccagacagat	gggacatcct	gggagaatgg	gcagagtctg	gggcttccca	gggtcacttt	3600
tggctcacca	cccttccctg	cctcagtggc	ttgggggcgc	catgctcctt	ggagtgcagc	3660
cctggttcaa	atcccagctc	tgccgagggc	tggttccata	gctccaggcg	agtcacgcct	3720
gctctgagaa	tcccacaatg	tcaaaccccg	tlagcaggat	tgtgggggtc	tgtggatcat	3780
gtggggacctg	cctggcatgt	ggaaggggct	tgggggtgcag	ctgtgtccct	ggccccagca	3840
ctgccacacc	cctcggtacc	ttgacctcac	ttttgcgctc	tggagggcag	aacctctgag	3900
ccagctctca	gggatacctt	ttttcctcga	tggccttttc	tgggaactgc	cctcgctgc	3960
tatctctgag	ccctgcctgc	ccttccccca	aagccatcat	agacccctac	ctcctatcca	4020
gatggagcct	ggccatggaa	tgcttggggg	gagagggacc	catagcgggc	tccgggcatt	4080
gttagggggc	taggtggtgt	ctgcagaggc	cccacctgtg	gcagggttta	catgccgcca	4140
cccttgcctc	cctcttgggt	agctgggggtc	agaaggccct	gaggccctac	tctctctgca	4200
tcttagtttc	ttcacatcta	aaatgctatt	catatgcctg	cctgagggtg	gttggggcct	4260
ccgtgcagta	agtggagaga	agccttcagc	cagaggaccc	ccatatgctt	aaacatccag	4320
acaccaaggg	ccactcacag	acagcagccg	gcttgtgttt	cgcatccctt	tttgggtcag	4380
gaactgggga	cgctggactc	cagatctcca	ggaggccatc	ccagactagg	cggggaaggag	4440
gcctcagccc	tgagctgaaa	acctgaaatt	ctagaataaa	ccccaggccc	cactcccagc	4500
atgggcagcg	gggaggggag	tgttctgaca	tttctcagct	gctgtgggtg	ggatgggtgc	4560
cccaccctga	gcagtgtggg	tcctgtgggc	ccctactcca	gcctggaggc	agctgcaggg	4620
gtcagagacc	agcctggagc	cctcgggcag	gttactcagc	ctcagctctc	attggtaacc	4680
caggtaaaaat	aacagtaatc	ccatcataag	gttgctgtgg	gcagtaggct	tccagccatg	4740
cctggcacat	aggaagctat	tgtcgtttgt	ttcactggct	tcgcacttgg	gcagaggccg	4800
ccgccctctc	tgctgccttc	tctacctcac	ccccgcgcc	cagcacgggtg	gcactgtggc	4860
tctggcgctt	ggtgacttct	ccctccccgg	cctcagggtt	gcttactctt	tccaagggcc	4920
ttcttggtgt	gactgtcctg	tccgtggccac	gtccactcca	agcagctggt	ccagggtgtg	4980
ggcagccccc	aagctcagca	gaggacagtt	ttgagactta	gaggaggacg	gcatacagatt	5040
tacatgaagt	cagccatctc	aagggtattac	cacgtcaccg	cctcctctca	caggtctgag	5100
agctggctcc	ctggagggtg	caggtctcat	cctaggtaga	acagtccag	cctagcttca	5160

aagtgtcct	gctgccagaa	agggtagaaa	accatgctga	atgccttcac	tgttgcttgg	5220
aatgggagcc	tcagtttcac	catctgtaaa	gtgagattaa	tgaaagggac	ccacagaggg	5280
ctgttagagc	cagtaggcgg	ccaggcgcg	tggctcacgc	ctgtaatccc	agcacttttg	5340
gaggctgagg	tgggcggtac	acgaggtcag	gagatcgaga	ccatcctggc	taacacggag	5400
aaaccccgctc	tctactaaaa	atacaaaaaa	ttagcctggc	gtgggtggcg	gcacctgtag	5460
tcccagctac	tggggaggct	gaggcaggag	aatggcgtga	acccgggagg	cggagcttgc	5520
agttagccaa	gattgtgcc	ctgctctcta	gcctgggcaa	cagagcaaga	ctccatctca	5580
aaagcaaaag	aaaaaagagc	cagtaggcca	ggcgctatgt	cttacacctg	taatcccagc	5640
acttttgggag	gcctaggcag	gcagatcacc	tgaggtcggg	agttcgagac	cagcctggcc	5700
gacacagtga	aactccgtct	ctactaaaaa	tacaaaaatt	agctgggcat	ggcagcacat	5760
gcctgtaac	ccagctactc	gggaggctaa	ggcaggagaa	tcacttgaa	acaggaggca	5820
gcggttgccg	tgagcggaga	tcacaccatt	gcactccagc	cccgggggga	cagagtga	5880
ttctgtctca	aaaaaaaaaa	aaaaaaaaaa	aagcaagcca	gtgggcaagg	acacacacca	5940
cgcccagcac	accagaagca	tgcagcagat	gctggctggg	agccacagcc	atggtagtaa	6000
ctggcatcac	tggcccaagg	gggtctccct	acccaatgta	ccagcccaga	gggtgctaaa	6060
tgacccatgt	ttgtgggcat	gtgtacccca	gtgctgaacc	tccttctggg	agattttcaa	6120
gcaccatttt	ggagaaggga	ggcagggacc	acagggggcc	agccagcctg	tacaggtttt	6180
ttgtgttttt	tttgtttgtt	tggtttgttt	ttttttgagg	cagggtctca	ctcttgccca	6240
ggctggagta	caggcagtg	cgctactctg	gctcactgca	gcctcaacct	cccaggctgc	6300
agcaatcctc	ccacctcacc	ttcctgagta	gctgggacta	caggcacaca	ccaccaaccc	6360
tcactatttt	ttgtagagac	agttttacca	tggtgcccag	gctgggtatca	aactcctgga	6420
ctcaggcgat	cctcccacct	tggcctccca	gagtgtctgg	attacaggca	tgagccactg	6480
cacctggcct	accagcctgt	aaagcttgag	ggctgggctc	caactggaga	ctcacctgcc	6540
tttcctttct	cttcatcaga	tgtgttcag	ctgccaagaa	gccggggcca	ccattgggtg	6600
ctgccacaaa	ggatgcctcc	acacctacca	ctacccgtgt	gccagcgatg		6650

<210> 611

<211> 460

<212> DNA

<213> Homo sapiens

<400> 611

aggctggagt	gcagtgggtg	gatcttggct	cactgcaacc	tccgcctccc	gagttcaagc	60
gattctcctg	cctcagcctc	tcaagtagct	gggactacag	gcgtgcacca	ccacgctcag	120
ctaattttttg	tattttttgt	agagatggg	tttactgct	ttggacagga	tggtctccat	180
ctcttgacct	cgtgatccgc	ccgcctcagc	tgccataagt	gctgggatta	caggcgtgag	240
ccactgtgcc	cggcccttag	tagcgttttt	aatgtgtggg	cttgagcaag	ttggttgata	300
cctctgcaca	cagtttccct	acctgtatga	tggagatgat	aatagccct	tctctgcaga	360
gctgtcggga	ggagagtgaa	ataatgaaca	ctaccacac	ggtgtgtcct	cagtcctatt	420
ttgggtccag	cctctgtgac	ctctccccac	acgggtgtgc			460

<210> 612

<211> 400

<212> DNA

<213> Homo sapiens

<400> 612

accctcttca	agaggatgtc	ttctcccaag	aaagccaagc	ccaccaagg	caatggcgag	60
cctgccacaa	agctcccacc	cccggagacc	cccgatgcct	gcctcaagct	cgcctctcgg	120
gcagccttcc	agggggccat	gaagaccaag	gtgtgtccac	cccgggaagg	ccggggcctg	180
aagctggaag	ccatcgtgca	gaagatcacc	tcgcccagcc	tcaagaagt	cgcatgtaaa	240
gcgcccagg	cctctcctgg	taatcctctg	agcccatccc	tttccgacaa	agaccgtggg	300
ctcaagggtg	ctgggggcag	cccagtgagg	gtggaagaag	gcctggtaaa	tgtgggcacc	360
gggcagaagc	tcccaacttc	tggggctgat	ccgttatgca			400

<210> 613

<211> 400

<212> DNA

<213> Homo sapiens

<400> 613

accctcttca	agaggatgtc	ttctcccaag	aaagccaagc	ccaccaaggg	caatggcgag	60
cctgccacaa	agctcccacc	cccggagacc	cccgatgcct	gcctcaagct	cgcctctcgg	120
gcagccttcc	agggggccat	gaagaccaag	gtgctgccac	cccgggaaggg	ccggggcctg	180
aagctggaag	ccatcgtgca	gaagatcacc	tcgcccagcc	tcaagaagtt	cgcatgtaaa	240
gcgccagggg	cctctcctgg	taatcctctg	agcccatccc	tttccgacaa	agaccgtggg	300
ctcaaggggtg	ctgggggagc	cccagtgagg	gtggaagaag	gcctggtaaa	tgtgggcacc	360
gggcagaagc	tcccaacttc	tggggctgat	ccgttatgca			400

<210> 614

<211> 460

<212> DNA

<213> Homo sapiens

<400> 614

aggctggagt	gcagtgggtg	gatcttggct	cactgcaacc	tccgcctccc	gagttcaagc	60
gattctcctg	cctcagcctc	tcaagtagct	gggactacag	gcgtgcacca	ccacgctcag	120
ctaatttttg	tattttttgt	agagatgggg	tttactgct	ttggacagga	tggctccat	180
ctcttgacct	cgtgatccgc	ccgcctcagc	tgccataagt	gctgggatta	caggcgtgag	240
ccactgtgcc	cggcccttag	tagcgttttt	aatgtgtggt	cttgagcaag	ttggttgata	300
cctctgcaca	cagtttccct	acctgtatga	tggagatgat	aatagccct	tctctgcaga	360
gctgtggga	ggagagtga	ataatgaaca	ctaccacac	ggtgctgcct	cagtcctatt	420
ttgggtccag	cctctgtgac	ctctccccc	acgggtgctg			460

<210> 615

<211> 518

<212> DNA

<213> Homo sapiens

<400> 615

atgattttta	aacagatttg	gcacaggagt	gcctttctgg	gtttaggga	gtggtggaca	60
aggcaggaga	gaaccacatt	catcttctcc	tcttgtgttt	gtcttctgtc	tttcaataac	120
gtccatgaac	tgtgagggtta	gtgtcttggc	tgagagataa	gtatggcttg	gcattgattc	180
ttctgttgtt	acctcaagct	gttttctagt	ccccagaac	agcactctca	gtgggtgtgg	240
aagtggcg	gacatgaagc	aatggtttta	cattgcattg	cctggctaca	gcttggcatt	300
tctttccttt	ttctttttct	ttgcgtcatt	gccattgggt	ccactaattt	tgtctccct	360
ctcttttata	acttgtttct	tcgggagttg	cctagagtct	ctgcattata	tcttatttgg	420
tattgaggca	gtgtgttctt	ggccaataac	ctaggagatg	atatctgttc	atcttacagg	480
tttagtgctg	gagggaattca	ttaaaaataa	taataaaa			518

<210> 616

<211> 3598

<212> DNA

<213> Homo sapiens

<400> 616

atggggcggc	cctggccaga	agcggaggag	gtggcaccgc	ggaccgagct	ggggtcttgg	60
aggaagagag	ggtgagggga	atacagtact	gggggtgaga	gaagggttgg	acagaagagg	120
gtcgggtatc	tgggcatgcg	cagggccgca	ggactcttgg	tggggtagcg	agggggacgg	180
tcccacgact	gtccgaagg	gccgggactc	ccagtggggg	cgggaccccc	ggagtgcccg	240
cctgcggact	cccaagcctg	gagcctgggg	agaggggtgg	cacctccgtt	ccgcacacc	300
cgtccatggg	gtgtgcgccg	agcgtccagg	agccacggcg	gtgtcttcc	tgcgcgtctt	360
ttacacgtgt	gggggtaggc	tgctcctcgg	ggctgagccg	tggccagggt	tatggagagg	420
ccgcctctc	cccagatggc	gtcgtcgagc	cctgactccc	catgttccct	cgactgcttt	480
gtctccgtgc	cccggcctc	agccatcccc	gctgtgatct	ttgccaagaa	ctcggaccga	540
ccccgggacg	aggtgcagga	ggtgggtgtt	gtccccgcag	gcactcacac	tcctgggagc	600
cggctccagg	tgggttagac	tttatggggg	gctgggaggt	gtggcagatc	tctgcattct	660
tttaagacct	tcttccctgc	tccccacacc	tgggaggtcg	ccagaagtag	tgggaagagca	720
tgagcttttag	gtctaccaac	ctggacctga	gctcattatg	tagcctcagt	ctacctcagt	780
ttctcttctt	gtaaaatggg	aatgagacct	tcctcaaagg	gatctataag	gtaattggca	840
gagtgccaca	ctcgaggggc	cgccccctta	tgagtggacg	cttcttttct	cctccctcac	900
ctccagtgca	cctacattga	agtgaacag	gtgtcgaaga	cgcacgctgt	gattctgagc	960

cgctcttctt	ggctatgggg	ggctgagatg	ggcgccaacg	agcatggtgt	ctgcattggc	1020
aacgaggctg	tgtggacgaa	ggagccagtt	ggggaggggg	aagccctgct	gggcatggac	1080
ctactcaggt	gcagaccctg	cccttccctca	tctgcctgac	acaccagaaa	tctaggggct	1140
gagttttgac	ctggggcccat	ccatccctcc	cccagcctgg	ttcacagggg	cctcctctctc	1200
tctgcagact	ttgcccctgt	gccttcgtga	agaaggctgc	agcagcagcc	acctttgggc	1260
ctctcctggc	ccagaaatag	agcagtggtt	atttatattat	tttcagttga	aatccttacat	1320
agagtcccaa	tttataaaac	cagtaatagt	ggatggagca	gctctgggtg	gagagagggt	1380
aggggctcag	gacactttct	tctctgaaac	tgtgtttcag	gccttttcat	ggaaccctca	1440
aagcatagca	catggaacca	gagcattgaa	agccactggc	ataattgcat	ttgatacgat	1500
cagtgccagc	agatttgctg	tgtgacttgg	gcctatcacc	aaacctctcc	gggcctcttc	1560
tgtcccctgg	agcttctgcc	accagccatt	gatccctctg	tcacccttct	gtcccctggc	1620
cctctctttt	ggcaggctgg	ctttggaacg	ggtagctctt	gcccaggagg	ccttgcatgt	1680
gatcacaggg	ttactggagc	actatgggca	ggggggcaac	tgcctggagg	atgctgcgcc	1740
attctcctac	catagcacct	tcctgctggc	tgaccgcact	gaggcgtggg	tgctggagac	1800
agctgggagg	ctctgggctg	cacagaggat	ccagggtgag	gtgttccctt	tctcccagct	1860
ttgggaagtg	ggagagatgg	taggggcagg	gaggggcccg	atccaggtgc	aagcctgtca	1920
ggacatccag	ggagatggga	gatgagccca	cttgggaatt	ctcctcccct	tcacttggtt	1980
aagtcttccg	tgtgctacag	cctgtttgctt	cctctgggaa	gccttccctg	acttccctgg	2040
gtggtcaggt	ttcctgctta	tatgcaagca	ggtagcttctt	tttcatcgca	ttcaacacag	2100
ttgtatgctt	acatttatct	ctgtgattat	tttgtctgcc	tccccacca	aaacgtaggc	2160
tccatgaggg	taggtagtct	tcttctccac	catgtttctca	gcacctcgcc	cagtgcctgg	2220
catagaatag	atgctcaatg	gtaaatgaac	cactccccga	tctcctccac	agagggggcc	2280
cgcaacatct	ccaaccagct	gagcattggc	acggacatct	cggcccaaca	cccggagctg	2340
cggactcatg	cccaggccaa	gggctgggtg	gatgggcagg	gtgcctttga	ctttgtctcag	2400
atcttctccc	tgaccagca	gcctgtgcgc	atggaggctg	ccaaggcccg	cttccaggca	2460
ggcggggagc	tgctgcggca	acggcaaggt	tagtgaacgg	tggagggggc	tggggggcag	2520
gagggccaca	gcagtgccag	ccactctccc	ctcccacagc	ttccccctct	actccttggc	2580
agggggcatc	acggcagagg	tgatgatggg	catcctcaga	gacaaggaga	gtggtatctg	2640
tatggactcg	ggaggctttc	gcaccacggc	cagcatggtg	tctgtcctgc	cccaggatcc	2700
cacgcagccc	tgcgtgcact	ttcttaccgc	cacgccagac	ccatccaggt	gggaagaatg	2760
aggggtggga	agggctggga	gaagagagga	tctgatatat	ctccgtgctt	ccatctgtgc	2820
ccctctaggt	ctgtgttcaa	acctttcatc	ttcgggatgg	gggtggccca	ggccccccag	2880
gtgctgtccc	ccacttttgg	agcacaagac	cctgttcgga	ccctgccccg	attccagact	2940
caggtagatc	gtcggcatac	cctctaccgt	ggacaccagg	cagccctggg	gctgatggag	3000
agagatcagg	tatccccag	ggagtggggg	ctaccttgag	gggatgatag	acctccccca	3060
ctcccagtg	gactctggaa	atatgaagga	actagggagt	ggaagagatt	tcagagctgg	3120
ggagaggagt	tcctcccttc	aaagccagca	actgcctttg	gggaatgtcg	gggggtatct	3180
cctttctcct	gcttgtgtga	ggtggtacac	agtcctccct	tcacctggcg	ggaagcctgt	3240
cccggacaga	ctcatctcag	cttcccttg	gggggcagac	gggggcagca	gctccagcag	3300
aaacagcagg	atctggagca	ggaaggcctc	gaggccacac	aggggctgct	ggccggcgag	3360
tgggccccac	ccctctggga	gctgggcagc	ctcttccagg	ccttcgtgaa	gagggagagc	3420
caggcttatg	cgtaaagcttc	atagcttctg	ctggcctggg	gtggaccag	gacccctggg	3480
gcctgggtgc	cctgagtggt	ggtaaagtgg	agcaatccct	tcacgctcct	tggccatggt	3540
ctgagcggcc	agcttggcct	ttgccttaat	aaatgtgctt	tattttctct	tcagtga	3598

<210> 617

<211> 5689

<212> DNA

<213> Homo sapiens

<400> 617

tttagaatca	ggtggctcac	tgagctctgt	attttgtttc	ctggagcttt	cactggtttc	60
ttcccctgag	ataccccaag	tgacatgaaa	agcatactca	gggcctagag	acactttact	120
ggggatgggc	ttctgtcaca	ggtcagaggt	ctgagaagag	gggcaggccc	cactcctctc	180
cactagtaga	gaaaggttga	cagagaatca	ttctctgctt	ctcttggccg	tagttttggt	240
tgtgctgggg	gcctcagcca	cagaggcctt	gggggctgtg	gctgctcgtg	cccccttcct	300
tccccagaaa	gagcttttgt	ggcccctggg	aatcagactg	catggtttct	tgggtgggaga	360
ggaggcctgg	ggtgaggaga	cggcctcagg	gactgtctcc	tccccttgcg	caggagtggc	420
agaagggtcg	ctgtccccag	ccatgggcac	ccaggtagc	aggggcaggt	cggtaggggt	480
gggctgcac	tccatcctca	gcaggtgctc	tgtcagggcc	gtctgttgcc	ggtgctccct	540
gtgctgctc	agctcctgct	ccagctcctt	gaggaagcct	gggaggggcc	gggggtggag	600

ggtacaggg	gggtggagcc	ctgggctcag	caggagggctc	cctgggctca	gggaagtctc	660
tggctggccc	cttgtccctt	gtgggaagga	gcctgaggct	ggggcccagg	actgacacct	720
ggctctggcc	cagatgttga	tctgaacttg	gggtccctt	ccccggacgc	cactgccacc	780
ttagcttccc	tcattgtccc	cagggcagag	gtgggctctg	gggaggctga	aaaccttgga	840
aagcagggtc	acctcgttct	gagcagaatg	ggccactcag	ctctgggaac	tcctcatcgc	900
ttgaggcttc	atcctcctca	tccgaaatcc	agcgctccac	cacaggctgc	ccgtccaggt	960
ccaggagaag	tggcagggct	tctgtcacca	gctcgctgca	gagcagaagg	agcagaggtt	1020
accaggagg	gcaccctggc	gtggaggatg	caaagacacg	caccacagca	ctcacaccg	1080
gaggggtgg	ggctcatgag	ctaggttaga	ggtgggggag	aaggtgtcat	ggacaggacc	1140
ccaggtttgc	aggtctgag	gggtctgggc	tgagtttagca	ggtagagctc	agccatgacc	1200
tttcttcccc	ccctccactc	cttaccggta	ggcatcctgg	ttggtgcagc	tgtttccaga	1260
caggttgagg	atgagaaggc	tctgggggaa	ctcatctgca	cacagcaaag	agagaggaaa	1320
tggggttctc	acttgatctt	agccaaaaga	ccatgaagcg	atgggaatgg	ggttctcata	1380
cccactttct	agtccaaagc	cagtacctct	aggcacaacc	ccttgaactc	cctgaggatg	1440
aaatgtggac	ctgcaggggc	atggctaata	gaagcatggg	cagatgggtg	cagaggggag	1500
ggcaggcccc	acaggggatg	tgtttgggtg	gccagggcga	gtgggttcct	acccagcttc	1560
aatgtttcta	tcaggttctc	agaaagggtc	agaaactgga	ggcatgggag	gtcagaggag	1620
ttttccacct	gctcgatttg	gtttcctggc	agagacagga	agctgtaggg	gaagggaagg	1680
gtacagaggc	agagctgaat	catggaacag	ctggaagaaa	agaggagggc	acctgacacc	1740
ggggcccctg	ggctaggcag	ctgatgacca	gtggggacac	atggccttct	ggggtgaggg	1800
agtagatcta	ggcttgctgg	tccttgactg	acaaggaccc	aggcttgagg	aaatctgaac	1860
cagttctttg	ggatatggct	aggttccccc	aacccctctt	cccctgcctg	agccctggca	1920
ccacataccg	caaggagggg	atgcaagcca	ggtttctcaat	ttgctggatc	ttattctgca	1980
agaagaaacc	gaagtgggga	aaccaagctg	agatcagatg	cgtcaggggc	cctttacggg	2040
gacaaagccc	caagaccatg	tctactctgc	agctggagat	ctggcacttt	gggaatgatc	2100
acccactctc	ttgaacaggt	tggcactacc	ttaagaaaga	tgattttctt	tccccatgtg	2160
gatggttaag	ggtgtaaacc	tggggtatct	aaacctgact	acgtatactc	ttctgattcc	2220
acaaccaaag	agtgcactgg	gaatcagaaa	aggaaactaa	gaagccacca	ggaaaacgga	2280
aagggccttg	gtggtggcct	gcatacacag	agagaacaat	gagcatacac	gaacttgacg	2340
gttaaagttt	ctatggggaa	agttgaagcg	agctgggaat	actcaaccag	gggaaggctg	2400
aagatcaacc	accaccacc	accaccacca	aacagccttc	aagtaggatc	tgaatgatgt	2460
acaggaatct	tcatagtttc	ctcttcttca	aaacaggaaa	tgggctggag	ctattttaacg	2520
tgaagatttt	agagtagatg	ccaaaaagaa	cttctagatc	aagagaagtg	cctaaagaac	2580
agtggaaagg	gcacagggtca	tgttcaggat	ctattttgag	ggaattagtt	tttcaattca	2640
ggaccctatg	tcattcgtct	gggaatgggt	taaataagag	tctgcctgcc	tgaacaccag	2700
ggaatgggca	ggatgacctg	gttggtcctc	ttcagatgag	acagattagg	tccacagggg	2760
tcaaggggag	gggaagggtg	gagaagaag	ttacccttgg	cagatagaga	ctgtgaagat	2820
tctggaggcc	ttctaagttc	ctgatagtag	taatcccttc	ccggtccagg	cggacagtct	2880
gcagttcatc	aagagtgtga	aacctgggaa	aagagtcagt	aaggggtggt	ttagagcacc	2940
actcatgtgg	tctcttagca	gggaggatgg	gagacggagg	aggggaaggg	tttcaaggag	3000
gggtagttgg	ctgagtcatt	ttaatcagat	gtgagaaaca	tcttgacatc	ttgaggtggt	3060
gtctagatca	tgaaccgggc	ttgacttgca	gactcgtatc	tctattgtta	gcactgggaa	3120
gggtgagaga	gaggagtaag	ggccctctgg	gaaattgggg	gatggcagct	tatggtttct	3180
ggagagattc	ataggcaaga	gaaaccttcc	tctggccagc	ttggatgggt	gaggcagggg	3240
tgggacagag	atgagacact	gcagaaagat	ccttcctcac	cttccttttg	agtcgttcat	3300
ggagaaaaaa	gcacttggtc	catccaccca	ttcattcatt	ccacaacatt	gctgagtgcc	3360
tactagagac	aaatgacaga	gtctctgccc	accactaata	aagaagcagg	gcaggctgac	3420
catggtggct	tacctgttac	tcccagcact	ttgggaggcc	gaggcaggag	gatcgctcga	3480
gcccaggagg	tcgaggctgc	agtgtgccat	gattatgcc	ctgcacttca	gcctgggtga	3540
cagagcaaga	ccctatgtca	taaaaaaaag	aaaaaaagag	gctgggagag	gtgggtcact	3600
gtaatccccc	cactttggga	ggtcgagggtg	ggtggattgc	ctgaggtcag	gagttcaaga	3660
ccagcctggc	taacatgggtg	aaaccccatc	tctactaaaa	atacaaaaaa	aattagccgg	3720
gtgtgggtgg	gcacacctgt	agtcccagct	actcgggagg	ctgaggctgg	agaatcgctt	3780
caactcagga	ggcagacgtt	gcagttagcc	gagatcacac	cattgcactc	cagcctgcgc	3840
aacagagtga	gactccgtct	caaaaaaa	aaaaaaaaat	aggaagaagg	ccaaacatct	3900
atgacaagtg	gataacagag	gcaagtacag	gggaaggaa	gaaggaggag	gaagaaggga	3960
aagaaggagg	aagaggaaga	agaaagaaag	aaagaaagaa	taaggccaaa	catccctgac	4020
aagtggataa	cagaagcaag	tacaggggac	aaagggagta	cataggctgt	gcactaaatt	4080
cacagtagga	ggaatcaggg	aatgtcttct	agaggagggtg	acagatgagt	aggcattagc	4140
catgaagggtg	gggggatatg	gggagaaggc	atttcaagca	gaagggaatag	tacatgctaa	4200
tacagccctt	ccgaaaactcc	aatatgcccc	tgcagattct	aattcagtag	atcgggtgga	4260

```

ggggctgaga tgctccactt ctaacaagcc ccctgtgatg ccaatgctgc tgcctaccc 4320
ctgcaccccc tcccatccac acatactctg agtagtaagg tactaagggtg tgagtacaca 4380
gtgtgggaaa ttgtacactt gtggagagtg gccagaaata aggcgtgaaa gcagaagtca 4440
actcatgctt aggcattggg atttatttgg gaggaagttt ctatcagtga atgcctgatt 4500
agatttgtta tttaaaagga tcactttggc tactcaggag gctgaagtgg gaggattggt 4560
tgaggagttc aagaccagtc tggccaacag agcaagaccc catctctaaa aaagtaatta 4620
aaaatacttt actttttgtt tgttttagaa atagggtctc accctgttgc ccaggctggc 4680
atgcaatggc atgatcatag cttactgcag ccacaggtac ctgggttcaa gtgatcctcc 4740
tgtctcagcc acctaggact acagggtgtc accaccatgc tcagctagtt tatttttatt 4800
tttttagagat aggattctgt ctctattgcc caggctggtc tcaaactcct gggctcaagt 4860
gatcctcctg cctcagcctc ccaaagtggg ggggtgtgtg gagagagggtg aacacggcct 4920
tatctaagac agttgagtga ggatgggtgaa aaagaaatgg aattattttg aagaagggaa 4980
aatcagatgc gcattaccac tgattgaatg tgtggagtaa ggagagaaac aaagatcagt 5040
tgacaaatca gtacacgtca gggacctggt catcctgagt gtttcagcct tctagcacc 5100
cttttctccc ccattgcactc acatcttctc tgacagttcc ccattctcag ggaaagtcaa 5160
gttccgctta gtgataaggg cttcagtgat gcagacgccc ccttcctctg gacctggggc 5220
tgacttccct gtgaaaagat gagtccaact gtgacacttc ctcactcttg gaggccttac 5280
cccgtgttt tccaactgct ctaccacccg tcccacctcc ctactcacct ccagacatga 5340
tctaaaataa aaggctgctg gtctgaggcg ggagaggaaac gaaaagagag gtcttgccgg 5400
ccctaagga tggcagaact caggatggca ggaggagaga gaaactcaga gacttaggag 5460
aggaggaaag ggggttgatt cagagaaaat tgctgggggtg aggtcgaaga aaacagtaaa 5520
ttgatgtgaa gggctcggag tttgaggggt gtggaggggc tttgctggca gcaagctggg 5580
gtgttggtgg caggaatggt tgagaaagga gcagttccta ggaagccgga gtcgttgcta 5640
agagactgga cgccgagtgg ggaggtaaag gcgggctccg ttggcccg 5689

```

<210> 618

<211> 776

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (709)..(709)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (738)..(738)

<223> n equals a,t,g, or c

<400> 618

```

tacaacgtcg tgactgggaa aaccctggcg ttaccaact taatcgcctt gcagcacatc 60
cccctttcgc cagctggcgt aatagcgaag agggccgcac cgatcgccct tcccaacagt 120
tgcgcagcct gaatggcgaa tggcgccctga tgccgtattt tctccttacg catctgtgcg 180
gtatttcaca ccgcataatg tgcactctca gtacaatctg ctctgatgcc gcatagttaa 240
gccagccccg acaccgcgca acaccgctg acgcgccttg acgggcttga ctgctcccg 300
catccgctta cagacaagct gtgaccgtct ccgggagctg catgtgtcag aggttttcac 360
cgtcatcacc gaaacgcgcg agacgaaagg gcctcgtgat acgcctattt ttataggtta 420
atgtcatgat aataatgggt tcttagacgt cagggtggcag ttttcgggga aatgtgcgcg 480
gaacccttat ttgtttattt ttctaaatac attcaaatat gtatccgctc atgagacaat 540
aaccctgata aatgcttcaa taatattgcc aaaggaagag tatgagtatt caacatttcc 600
gtgtcgcctt tattcccttt attgcggcat tgagcctgtc tgtttttgct caccagaaa 660
cgctgggtgaa agtaaaagat gctgaagatc agttgggtgc acgagtggng tacatcgaac 720
tggatctcaa cagcggttag atcctcgaga ggtttcgccc ccgaagaacg tttttc 776

```

<210> 619

<211> 878

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature
 <222> (741)..(741)
 <223> n equals a,t,g, or c

<400> 619
 gaaaaccctg gcgttaccca acttaatcgc cttgcagcac atcccccttt cgccagctgg 60
 cgtaatagcg aagaggcccg caccgatcgc ccttcccaac agttgcgcag cctgaatggc 120
 gaatggcgcc tgatgcggta tttctcctt acgcatctgt gcggtatttc acaccgcata 180
 tgggtgcactc tcagtacaat ctgctctgat gccgcatagt taagccagcc ccgacacccg 240
 ccaacacccg ctgacgcgcc ctgacgggct tgtctgctcc cggcatccgc ttacagacaa 300
 gctgtgacgg tctccgggag ctgcatgtgt cagaggtttt caccgtcatc accgaaacgc 360
 gcgagacgaa agggcctcgt gatacgccta tttttatagg ttaatgtcat gataataatg 420
 gtttcttaga cgtcaggtgg cacttttcgg ggaaatgtgc gcggaacccc tatttgttta 480
 tttttctaaa tacattcaaa tatgtatccg ctcatgagac aataaccctg ataaatgctt 540
 caataatatt gaaaaaggaa gagtatgagt attcaacatt tccgtgtcgc ccttattccc 600
 ttttttgccg cattttgcct tccgtgtttt gtcacccag aaaacgctgt gaaaagtaaa 660
 gatgctgaag atcagttggg tgcacgagtg ggttacatcg aactggatct caacagcggg 720
 aaaaaccctt agagttttcg nccccgagaa cgtttttcaa tgatgagcac ttttaaagtt 780
 ctgctatgtg gcgcggtatt aatccctatt tacgcccggg cagaagcact cggtcgcggg 840
 atacactatt ctagaatgac ttggttgagt actaacca 878

<210> 620
 <211> 150
 <212> DNA
 <213> Homo sapiens

<400> 620
 cgtcgtgact gggaaaaccc tggcgttacc caacttaatc gccttgagcgc acatccccct 60
 ttgcgcagct ggcgtaatag cgaagaggcc cgcaccgacg gcccttccca acagttgcgc 120
 agcctgaatg gcgaatggcg cctgatgcgg 150

<210> 621
 <211> 1299
 <212> DNA
 <213> Homo sapiens

<400> 621
 tttttttttt ttttggcaaa taaagagtaa aacaggctat ttaaaacatc cattttaaag 60
 caaattttga tatcccaaga gaaaaatgtt aatcatttaa atagacagga ttatcgccca 120
 cccttaccac ttccctcctc tcccaagttt tagaaaacgt agccttagcc cacacaagtc 180
 aagtcagcca ggagtcctta catcttaaga actcccatc agatgagagg gctgaggcag 240
 atagaggggg acttttcctt cttttgagga aggagatgga aaagagagaa aatagtctaa 300
 catatcctat aagccaggca tggggcaata ttataaatac aaacacacac acacacacac 360
 acacatgcat gcacacacac acaccacac ttaatcatca caactgtctt ggaacgggga 420
 attatcatcc tcatctacag acaaggaaac tgaggcttag aaaggatgaag cagtttgccc 480
 cactggtagg tgaccaggtt gggagtagag gcctccatag ccctcccagt ccatggtgac 540
 ctgcggtcct gtccagactc acccagcatc cccatgccaa gcatgaacgc gtccatggtg 600
 taaggcagtc cccyggcccg gcctcttgct ccagggtggga acatgacttc tttcggctga 660
 gctttcttac attctacctg ttaaacagaa aggcgaacaa atgagatgca aatgaattcc 720
 acgtaaatgt caaatgcaga acctgtctgg ttatgagcta agttattttt agccttgctc 780
 cttaccact gtaaaaatag ccatgccgag taaatggcct gcaaaaataaa tacttaagaa 840
 aacacgccac ttgtgcaaat cctgcttcgg aaaaacctac aaggatgaaa ctgggttctg 900
 gaggggtggc aaggacgtaa gctgcagata tacacacaga ttgaagctca ggctgacgct 960
 cgtgcagaaa gcatgacaga taaggaggca gacaatggct gttggatgtg tctgtgaata 1020
 ataacaacaa tagcaataat aataatccct caggattttt cagcccttta cacatttaca 1080
 aatgcccctg acattctctc aggccagtga ctcttcatgc caggccatct gattcaaact 1140
 cttattaaac agacagacca cttagcctta gtccagttc acagatgaga aaacagagca 1200
 tcgaagttt ttgtgtggct gggcgtgggg gatcatgttt gtaatcccag cactgtggga 1260
 ggtggaggca ggtgaatcag cttgagccca ggcgtttca 1299

<210> 622

<211> 330
 <212> DNA
 <213> Homo sapiens

<400> 622
 ttttttaaaaa catttttctca tttatttctca cttgttttctt cttccaggga taagtttttag 60
 aaacatctgg ccaattttaa aaaattacaa taggatttctt ctttgaaact ctgttaagcc 120
 taaaaaattc atatgaggag aattaacatc atggccattt ttaatatctt cctggcatct 180
 ttttctattt cataaagttc ctcaaaatag ttttacctgc ctttgttatt tcctcagaca 240
 agtagataca attcctttgtc agaccacaag atgtttttata aattttaaata taagccagaa 300
 gtgattttaa cagcagcaaa tctgaaaata 330

<210> 623
 <211> 3328
 <212> DNA
 <213> Homo sapiens

<400> 623
 ttgttttgtc tcagggttttt tttttctttt ttttttttga gaggggtgtct cgctctgttg 60
 acaggctgga gtacagtagc acgatctcag gccactgcaa cctctacctt ctgggttcaa 120
 gagattctcc tgccctcagcc tcccaagtag ctgggactat aggcgcagtc caccacgccc 180
 agctaatttt tgtatttttta gtagagacag ggtttcacca ttgttggcca agctgggtctc 240
 gatctctttg accttgtgat ccaccacct tggcctccca aagtccctggg attacaggcg 300
 tgagccactg tgcccagcct ggctcagggt tttcaatata gtcttgacct tggcattcag 360
 tatcctcaca gcatgggttct aattaaactt ctagctctat ttcccttttc ctgctccctc 420
 tctctacaac tagtctttct ctgattgccc cgccctcaac ccatctaaac tagaccccag 480
 ggaagcacct tgggtcccctt cctctctccc actcaccatc caaccaatca ccagagcctg 540
 tacattctat attttcaaca tcgattcaat tgtctacttc tttctagcct gccctctctg 600
 actgggactc cttgagccag cctgatcacc ccaatccatc cctcacactg tgcccactctt 660
 tctgaagtag gaatctgac acaccacctt gctaaaaaca ctctgggtctt ccccacggca 720
 tgtgtgtccc ttgtatagct ggcaaagcct tgcattggcag gcccccagcc tgtgcttcaa 780
 ctcaattgcc cgaactctctc cagctctgct gagccaccta agtcacagat ggtttctcct 840
 ctcatctctg ctctcttcca tgtgccattt ctgtggcttg gaatgttctt cctcattctt 900
 ctttctggcc ctttcccgtc acaccttaga cgtgcactct cctctcgaac acctctagt 960
 aagcctccca gggccaggca gtaccctcct ctggcttctt ctggatacag aggaagaatc 1020
 tgagcatcga ttctccatct cagcaggcct ctgtgtgcct gctgactccg actagaccag 1080
 agatccgtaa ggacagggat cgagtttttt ttcttttaac tcaactgcct aaaaatcctc 1140
 tgtgcattac ctattcatcc tcttctctcc cttaacctga accagtgatc ttactgtctc 1200
 catcattgtt tttttctttt cttttctttt cttttttttt tttgaggtgg agtctggctc 1260
 ttcacccagg ctggagtga gtgatgcgat ctgcactcac tgcaacctcc atctcctggg 1320
 ttcaagcgat tctcctgcct cagcctcccc agtagctggg attacaggca tgcgctacca 1380
 tccccaaacta atttttgct ccataatttt gccttttcta gaatgtcata cagggtggaat 1440
 tactcagtag gctgcctttt tcagattggc ttcttttact tagtaatatg tttgtttttt 1500
 gagacagggg cttgtctctg cgcccaggct agagtgtggg ggtgcgatct tagctcactg 1560
 aaacctccac ctcccagggt caagtgactc tctgcctca gcctcccag tagctgggac 1620
 tacaggcaca tgccaccata cccggctaatt ttgtggattt ttagtacaga cgggggttca 1680
 tcatgttggc cagggtgttg ttgaattcct gacctcaagt gatccacctg cctcagcctc 1740
 ccaaagtgtt gcgattacag gtgtgagcca ctgcgcgaag cctcatttag taatatgcat 1800
 ttaaactttc tccatgtctt taatggcttg atagctcatt tatttttatc atggaatatt 1860
 tcattgtctg gatggaccac agtttatttc tccattcacc tactgaagga catctcgggt 1920
 gcttctaagt tttggcaatt atgaataaag ctgctataac catcaagtgc aggtttttgt 1980
 gtggacctat tatcaactaa ttcgggtaaa tctcaaggag tgcaattgct ggatcacaca 2040
 gtaagagtgt gtttagtttt aagtggctgt gccattttgc attcccacca gcaatgaatg 2100
 agagtttctg ttgtccaca ttctcactac cattcgggtg tgtcagtggt ttgcattttg 2160
 gccattctag taggtgttta catggtatct agtcatttga atgggcata gatgtggaac 2220
 atcttttttt ttttaatttt attattatta tactttaagt tttagggtac atgtgcacaa 2280
 cgtgcagggt ttgtacatat gtatacatgt tctattgttg tgtgctgcac ccattaacta 2340
 gtcatttagc attaggtata tctcctaatt ctattggaac atcttttcat gtgtttattt 2400
 gccatctgta tatcttccct gatgagttgg ggatgcattc tttccatctc agagtcccca 2460
 gaaactaaca tagcagtttg tacagagttg gtgctcaaca aacatcagct taggaactat 2520
 gtcctatgtt tttttgtttt tttttttttt taaaaaggaa tgtgagctgt tccccaaacg 2580

tatgtccttc	ccccatgcct	ctaccctgcc	cttccacaaa	ctttctgac	ttcagcacac	2640
actacccaac	catcaaggct	gagacttccc	gtggccagca	gtgtctcatg	ctggcttcaa	2700
gccccacagc	actgcttttt	tcaacttctc	ttgtggttta	gactgtcttt	agcccagcaa	2760
gagaattcat	tgtcttatcc	cccattaaac	tgtacctaca	ctctttgagg	aaaagggtcc	2820
atcttactta	aaatatttta	aaaattcaca	tgtgataaaa	ctgatgtgta	tgtgtatgag	2880
agagagagaa	agagagaaca	gttctatgag	gcttaatgta	tacatgtggc	tgtgcagccc	2940
actgccccat	gtcaccattt	tcaattctgt	cattaccctt	gggacaatgt	cttgtcaata	3000
tacacttgag	gctggggcgg	gtggttcctg	cctgtaatcc	cacctgtaat	caggagtcca	3060
agaccagcct	ggccaacaca	gcaaaacccc	gtctctacta	aaaatacaaa	aatttgctgg	3120
gcgtgggtgg	acgggcctgt	aatcccagct	actcagggtg	ctgaggcagg	acaatcgctt	3180
gaaccgggga	ggtggagggt	gcagttagcc	aagatcggtc	cactgcactc	cagcctaggg	3240
aacagagcga	gactctgtct	caaaaatata	tacatacaca	cacacataca	cacacacggc	3300
caagagacac	agtgagtaga	aacaccga				3328

<210> 624

<211> 3051

<212> DNA

<213> Homo sapiens

<400> 624

tttttttttt	tgagaggggtg	tctcgctctg	ttgacaggct	ggagtacagt	agcacgatct	60
caggccactg	caacctctac	cttctgggtt	caagagattc	tccctgcctca	gcctcccaag	120
tagctgggac	tataggcgca	tgccaccacg	cccagctaat	ttttgtattt	ttagtagaga	180
cagggtttca	ccattgtttg	ccaagctggg	ctcgatctct	ttgacctgtt	gatccacca	240
ccttggcctc	ccaaagtcct	gggattacag	gcgtgagcca	ctgtgccag	cctcggctca	300
ggtttttcaa	tacagtcttg	accttggcat	tcagtatcct	cacagcatgg	ttctaattaa	360
ctttctagct	ctattttccct	tttctgtctc	cctctctcta	caactagtct	ttctctgatt	420
gccccgcctt	caacccatct	aaactagacc	ccagggaagc	accttgggtc	ccttccctctc	480
tcccactcac	catccaacca	atcaccagag	cctgtacatt	ctatattttc	aacatcgatt	540
caattgtcta	cttcttttcta	gcctgccctc	tctgactggg	actccttgag	ccagcctgat	600
caccoccatc	catccctcac	actgtgcccc	tctttctgaa	gtaggaatct	gatcacacca	660
ccctgctaaa	aacactctgg	ttctccccc	ggcatgtggg	gcccttgat	agctggcaaa	720
gccttgcatg	gcaaggcccc	agcctgtgct	tcaactcaat	tgcccgactc	tctccagctc	780
tgctgagcca	cctaagtcac	agatgggttc	tctctctatc	tctgctctct	tccatgtgcc	840
atttctgtgg	cttggaatgt	tcttccctca	ttctctttct	ggccctttcc	cgtcacacct	900
tagacgtgca	tcttccctctc	gaaaacctct	agtgaagcct	cccaggggcca	ggcagtagcc	960
tctcttggtt	tcttctggat	acagaggaag	aatctgagca	tcgattctcc	atctcagcag	1020
gcctctgtgt	gcctgctgac	tccgactaga	ccagagatcc	gtaaggacag	ggatcgagtt	1080
ttttttcttt	taattcactg	cctcaaaaat	cctctgtgca	ttacctattc	atcctcttct	1140
ctcccttaac	ctgaaccagt	gatcttactg	tctccatcat	tgtttttttc	ttttcttttc	1200
ttttcttttt	tttttttgag	gtggagtctg	gctcttcacc	caggctggag	tgcagtgatg	1260
cgatctcgac	tacttgcaac	ctccatctcc	tgggttcaag	cgattctcct	gcctcagcct	1320
ccccagtagc	tgggattaca	ggcatgcgct	accatcccca	actaattttt	gcctccataa	1380
ttttgccttt	tctagaatgt	catacagggt	gaattactca	gtatgctgcc	tttttcagat	1440
tggcttcttt	cacttagtaa	tatgtttggt	ttttgagaca	gggtcttgct	ctgtcgccca	1500
ggctagagtg	tgggtggtgcg	atcttagctc	actgaaacct	ccacctccca	ggttcaagtg	1560
actctcctgc	ctcagcctcc	cgagttagctg	ggactacagg	cacgtgccac	cataccgggc	1620
taattttgtg	atttttagta	cagacggggg	ttcgctcatgt	tggccagggt	gttgttgaat	1680
tcttgacctc	aagtgatcca	cctgcctcag	cctcccaag	tgttgcgatt	acagggtgtga	1740
gccactgcgc	caagcctcat	ttagtaatat	gcatttaaac	tttctccatg	tctttaatgg	1800
cttgatagct	catttatttt	tatcatggaa	tatttcattg	tctggatgga	ccacagttta	1860
tttctccatt	cacctactga	aggacatctc	ggttgcttct	aagttttggc	aattatgaat	1920
aaagctgcta	taaccatcaa	gtgcagggtt	ttgtgtggac	ctattatcaa	ctaattcggg	1980
taaatctcaa	ggagtgaat	tgctggatca	cacagtaaga	gtgtgtttag	ttttaagtgg	2040
ctgtgccatt	ttgcattccc	accagcaatg	aatgagagtt	tctgttgctc	cacattctca	2100
ctaccattcg	gtgttgctag	tgttttgcat	tttggccatt	ctagtaggtg	tttacatggt	2160
atctagtcat	ttgaatgggc	atatgatgtg	gaacatcttt	ttttttttaa	ttttattatt	2220
attatctctt	aagtttttag	gtacatgtgc	acaacgtgca	ggtttggtac	atatgtatac	2280
atgtgccatg	ttggtgtgct	gcacccatta	actagtcatt	tagcattagg	tatatctcct	2340
aatgctattg	gaacatcttt	tcatgtgttt	atttgccatc	tgtatatctt	ccctgatgag	2400
ttggggatgc	attctttcca	tctcagagtc	cccagaaact	aacatagcag	ttggtacaga	2460


```

gttgggtgctc aacaaacatc agcttaggaa ctatgtccta tgtttttttg tttttttttt 2520
tttttaaaaa ggaatgtgag ctgttcccaa aacgtatgtc cttcccccatt gcctctaccc 2580
tgcccttcca caaactttct gatcttcagc acacactacc caaccatcaa ggctgagact 2640
tcccgtggcc agcagtgtct catgctggct tcaagcccca cagcactgct tttttcaact 2700
tctcttgtagg tttagactgt ctttagccca gcaagagaat tcattgtctt atccccatt 2760
aaactgtacc tacactcttt gaggaagg gtccatctta cttaaaatat tttaaaaatt 2820
cacatgtgat aaaactgatg tgtatgtgta tgagagagag agaaagagag aacagttcta 2880
tgaggcttaa tgtatacatg tggccgtgca gccactgcc ccatgtcacc attttcaatt 2940
ctgtcattac ccctgggaca atgtcttgtc aatatacact tgaggctggg cggggtggtt 3000
cctgcctgta atcccacctg taatcaggag ttcaagacca gcctggccaa c 3051

```

<210> 625

<211> 3029

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)..(1)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (4)..(4)

<223> n equals a,t,g, or c

<220>

<221> misc_feature

<222> (150)..(150)

<223> n equals a,t,g, or c

<400> 625

```

ntanccatt gtgcccagcc tggctcagg ttttcaatac agtcttgacc ttggcattca 60
gtatcctcac agcatgggtc taattaactt tctagctcta tttccctttt cctgctccct 120
ctctctacaa ctagtctttc tctgattgcn ccgccctcaa cccatctaaa ctagacccca 180
gggaagcacc ttggtccctt tctctctctc cactcaccat ccaaccaatc accagagcct 240
gtacattcta tattttcaac atcgattcaa ttgtctactt ctttctagcc tgccctctct 300
gactgggact ccttgagcca gcctgatcac cccaatccat ccctcacact gtgcccattc 360
ttctgaagta ggaatctgat cacaccaccc tgctaaaaac actctggttc tccccacggc 420
atgtggtgcc cttgtatagc tggcaaagcc ttgcatggca cggccccagc ctgtgcttca 480
actcaattgc ccgactctct ccagctctgc tgagccacct aagtcacaga tggtttctcc 540
tctcatctct gctctcttcc atgtgccatt tctgtggctt ggaatgttct tccctcatte 600
tctttctggc ctttcccggt cacaccttag acgtgcatct tctctctgaa aacctctagt 660
gaagcctccc agggccaggc agtaccctcc tctggcttct tctggataca gaggaagaat 720
ctgagcatcg attctccatc tcagcaggcc tctgtgtgcc tgctgactcc gactagacca 780
gagatccgta aggacaggga tccagttttt tttcttttaa ttactgcctt caaaaatcct 840
ctgtgcatta cctattcatc ctcttctctc ccttaacctg aaccagtgat cttactgtct 900
ccatcattgt tttttctttt tctttctttt tctttttttt ttttgagggtg gagtctggct 960
cttcaccagc gctggagtgc agtgatgcga tctcgactca ctgcaacctc catctcctgg 1020
gttcaagcga ttctcctgcc tcagcctccc cagtagctgg gattacaggc atgctgtacc 1080
atccccaact aatttttgcc tccataattt tgccctttct agaattgcat acagggtgaa 1140
ttactcagta tgctgccttt ttcagattgg cttctttcac ttagtaatat gtttgttttt 1200
tgagacaggg tcttgctctg tcgcccaggc tagagtgtgg tgggtgcgatc ttagctcact 1260
gaaacctcca cctcccagg tcaagtgact ctctgcctc agcctcccga gtagctggga 1320
ctacaggcac atgccaccat acccggtcaa tttgtggatt ttagtagacag acgggggtttc 1380
atcatgttgg ccagggtggt gttgaattcc tgacctcaag tgatccacct gcctcagcct 1440
cccaaagtgt tgcgattaca ggtgtgagcc actgcgcaa gcctcattta gtaatatgca 1500
tttaaacctt tcccatgtct ttaatggctt gatagctcat ttatttttat catggaatat 1560
ttcattgtct ggatggacca cagtttattt ctccattcac ctactgaagg acatctcggt 1620
tgcttctaag ttttggcaat tatgaataaa gctgctataa ccatcaagtg cagggtttttg 1680
tgtggacctt ttatcaacta attcgggtaa atctcaagga gtgcaattgc tggatcacac 1740

```

agtaagagtg	tgtttagttt	taagtggctg	tgccattttg	cattcccacc	agcaatgaat	1800
gagagtttct	gttgctccac	attctcacta	ccattcggtg	ttgtcagtg	tttgcathtt	1860
ggccatttcta	gtaggtgttt	acatgggtatc	tagtcatttg	aatgggcata	tgatgtggaa	1920
catctttttt	tttttaattt	tattattatt	atactttaag	tttttaggta	catgtgcaca	1980
acgtgcagg	ttgttacata	tgtatacatg	tgccatgttg	gtgtgctgca	cccatthaact	2040
agtcatttag	cattaggtat	atctccta	gctattggaa	catcttttca	tgtgtttatt	2100
tgccatctgt	atatcttccc	tgatgagttg	gggatgcatt	ctttccatct	cagagtcccc	2160
agaaactaac	atagcagttg	gtacagagtt	ggtgctcaac	aaacatcagc	ttaggaacta	2220
tgctctatgt	ttttttgttt	tttttttttt	ttaaaaagga	atgtgagctg	ttcccaaaac	2280
gtatgtcctt	cccccatgcc	tctaccctgc	ccttccacaa	actttctgat	cttcagcaca	2340
cactacccaa	ccatcaaggc	tgagacttcc	cgtggccagc	agtgtctcat	gctggcttca	2400
agccccacag	cactgctttt	ttcaacttct	cttgtgtgtt	agactgtctt	tagcccgaca	2460
agagaattca	ttgtcttata	ccccattaaa	ctgtacctac	actcttttag	gaaaagggtc	2520
catcttactt	aaaatatttt	aaaaattcac	atgtgataaa	actgatgtgt	atgtgtatga	2580
gagagagaga	aagagagaac	agtcttatga	ggcttaatgt	atacatgtgg	ctgtgcagcc	2640
cactgcccc	tgccaccatt	ttcaattctg	tcattacccc	tgggacaatg	tcttgtcaat	2700
atacacttga	ggctgggagg	ggtggttctt	gcctgtaatc	ccacctgtaa	tcaggagttc	2760
aagaccagcc	tggccaacac	agcaaaaccc	cgtctctact	aaaaatacaa	aaatttgctg	2820
ggcgtggtg	cacgggcctg	taatcccagc	tactcaggtg	gctgaggcag	gacaatcgct	2880
tgaaccgggg	aggtggagg	tgcatgagc	caagatcggt	ccactgcact	ccagcctagg	2940
caacagagcg	agactctgtc	tcaaaaatac	atacatacac	acacacatac	acacacacgc	3000
gcaagagaca	cagtgaagtag	aaacaccga				3029

<210> 626

<211> 224

<212> DNA

<213> Homo sapiens

<400> 626

gaccaacatg	gtgaaaccct	gtctctacta	aaaacacaaa	atttagctgg	gtgtgggtggt	60
gcgcacctgt	aatcccagct	actcaggaag	ctgaggcagg	agaatcactt	gaacctggta	120
gggtggagggt	gcagtgaagc	gagatcatgc	cactgcactc	cagcctgggt	gacagagcga	180
gactctctct	ccaaaaaaa	aaaaaaaaaac	ctagaccaga	tgca		224

<210> 627

<211> 468

<212> DNA

<213> Homo sapiens

<400> 627

tcagcattaa	aatttgggga	aaaaaatgtt	tgaagatcaa	tgaaaaatag	cactggactc	60
tatatattact	tatataagat	ttttttttta	aatcttgatg	aaaattttta	ttaggctaga	120
attgcagagc	tgcaagagaa	ttctgagatc	aacagggtctt	tttccctcat	ttaccagctg	180
agaaacttgg	ggtcatagga	gattaagatt	gtttatctta	ccagttgaat	tcaatacttt	240
cagaaataat	tgttagaatt	cagtgaaggt	tattctctta	aaagtacact	gcttttcagc	300
tcctatcaag	tgtttcccta	tgcttccaca	atcctgatta	tcaatttggg	tatggggccac	360
tctgggaaag	gctgtcaaat	gtttattcta	gaatccagca	actcccagat	gtccatctcc	420
atctcaggtt	ctggtcaaag	tctgatgtag	caaagaaaca	gagtaaca		468

<210> 628

<211> 222

<212> DNA

<213> Homo sapiens

<400> 628

ccaacatggt	gaaaccctgt	ctctactaga	aacacaaaat	ttagctgggt	gtggtggtgc	60
gcacctgtaa	tcccagctac	tcaggaagct	gaggcaggag	aatcacttga	acctggtagg	120
tggagggttc	agtgaagctga	gatcatgcca	ctgcactcca	gcctgggtga	cagagcgaga	180
ctctctctcc	aaaaaaaaaa	aaaaaacctt	agaccagatg	ca		222

<210> 629

<211> 468

<212> DNA

<213> Homo sapiens

<400> 629

tcagcattaa	aattttgggga	aaaaaatgtt	tgaagatcaa	tgaaaaatag	cactggactc	60
tatatattact	tatataagat	ttttttttta	aatcttgatg	aaaattttta	ttaggctaga	120
attgcagagc	tgcaagagaa	ttctgagatc	aacagggtctt	tttccttcat	ttaccagctg	180
agaaaacttgg	ggtcataagga	gattaagatt	gtttatctta	ccagttgaat	tcaatacttt	240
cagaaataat	tgtagaatt	cagtgaaggt	tattctctta	aaagtacact	gcttttcagc	300
tcctatcaag	tgtttcccta	tgcttccaca	atcctgatta	tcaatttggg	tatgggccac	360
tctgggaaag	gctgtcaaat	gtttattcta	gaatccagca	actcccagat	gtccatctcc	420
atctcagggt	ctgggtcaag	tctgatgtag	caaagaaaca	gagtaaca		468

<210> 630

<211> 224

<212> DNA

<213> Homo sapiens

<400> 630

gaccaacatg	gtgaaaccct	gtctctacta	aaaacacaaa	atttagctgg	gtgtgggtgt	60
gcgacactgt	aatcccagct	actcaggaag	ctgaggcagg	agaatcactt	gaacctggta	120
gggtggaggt	gcagtggagct	gagatcatgc	cactgcactc	cagcctgggt	gacagagcga	180
gactctctct	ccaaaaaaa	aaaaaaaaac	ctagaccaga	tgca		224

<210> 631

<211> 1854

<212> DNA

<213> Homo sapiens

<400> 631

tttttttttt	gagactataa	acatatatat	acacgtagta	ttttctatgg	ttgccaattc	60
ttatgctaga	tgtagcatt	acaaattcgt	ataaaatctg	tgccgcctt	catagtccaa	120
caacaaacgt	ttgctgagtg	tagaactccc	aggagttctc	tcatggacac	aacagccaca	180
ctcacctca	cattagctgg	cagaggccct	ttataccagt	gatacgttg	ggccaagggc	240
ccctgggttg	aaaatcatta	ggtagacacc	atccagtgcc	ctgtctcatg	tgctgaacag	300
ggctagtaat	gccgactttc	actttgggag	gccaaagtcg	gtggatcact	tgaggccagg	360
aggtcaggac	cagctagcca	acatggtaaa	accctgtctc	tactaaaaat	acaaaaatta	420
gctgggcatg	gtggcatatg	cctatagtgc	cagctactca	ggaggctgag	gcatgagaat	480
cacttgtaac	caggaggccg	aggtttcagt	gagccaagat	catgccacta	cactccagcc	540
tggtgtacag	agtgatatag	atctcaaaaa	aaaaaaaaaa	aagtgtcaac	ctttacttct	600
attttatcaa	gttcttggtc	cagcctgtcc	ttttcaaaag	ataccctcct	tggtaaagat	660
tccaaagttt	tggtttttct	ttaaatgtat	gcatccaatg	tctttttcat	ttcatthaag	720
tcaataaaat	atttgtcctg	ggtttccaat	aaggatattg	agattttcct	gtgccataat	780
gactgtattt	ggtacaggca	aggcaatata	ctaaggtctc	tctacagatc	ttgaaatca	840
gatcagcctt	ggaggatgaa	attagtaaca	actaatcac	cctggaggac	accagccctt	900
tggaaggcat	tcattggaag	agactagaaa	agcagttgag	gttgggagtt	tctcatttca	960
ggcaaagtga	caaggagtg	gtatcagaaa	atacgatctt	aactaagaaa	gctagaacct	1020
atatcactct	agaagactgt	tcacaaacgg	tagcagggcc	catgtgcagc	ttggaaagag	1080
gaagcttaat	gtgcaaaaa	ttaatatccc	tgcaactctc	tggaatttgg	caagatggtc	1140
cctcagaaga	gcagatctgt	gtggtgagtg	agatatcaca	gctccatgag	gtgaacacca	1200
aaccttccaa	tcatacgttg	tctcccatgt	acttatggag	aatggtagac	aaaactcact	1260
gaactgcttc	atgtgtacat	tgatctcttg	tgaccttgct	ttgtgggagt	tagtcccaga	1320
gaatctttat	aaactggcaa	gattttctga	cctaaagagg	taggatctgt	ggaaaatgat	1380
gacctaccaa	agtacaaatc	tagagaactg	aggtttggag	aacatgaaaa	ccatgggtcaa	1440
acacgtgaag	gcctgccact	gggaagagga	attcaactag	caatacacag	gcccactaa	1500
tatgtaagaa	agacactaca	aagtagtagt	taagaacaca	ggctctggag	ccaaacgact	1560
tggctctaac	acttactggc	tccatgacct	tgaacaactt	aggttccatg	tgccttaatt	1620
tctccatctg	ttaaataaag	tgattgtgaa	gatttaatga	gataatccaa	ataaatgctt	1680
agtacaatgt	atggaacaca	gcaagttctc	aagagactag	ccattacatc	attattatcc	1740
aaagaagaaa	cagaccaccc	tgtaagattt	ggaagggagc	tccccagga	ctcctccac	1800

cccctgccag gggtagacag agactagttt attgagggcc aaacacaaaa cttg 1854

<210> 632

<211> 2128

<212> DNA

<213> Homo sapiens

<400> 632

tctacctccg	ggctgaaacg	tcacatgcc	tccccacaga	cagacggatg	gacagatggg	60
cctccctgca	cctgctctgt	gggtgtgggg	gctcctgctc	agcagcagtt	tccagaccct	120
tctccctgct	ttccccaagc	caccgcctt	gaatctgggg	tgctctacca	gacccatccc	180
ctcattttcta	aagatttgag	ccactagtgc	tgtccctctc	cctcagaaat	gccttggtga	240
cacttggtctg	ctttcaactc	ttccacccat	ctgcctcttg	gtctcatctt	taccttctgc	300
taaaggctct	gacccccacc	cccgccacgc	catggggcac	cccatggtgg	tgctctcttg	360
ggagcagctc	tgtccctttc	cccgtggcct	ttgccccgcc	tcctatgact	tcgattccca	420
cctgtccccg	acccttggga	ccactgaccg	ggcccgatca	cctgtgctact	gccctgtcat	480
ctgcttacct	cacacggtgc	tctgctgacc	caggtcttgc	tgtctcccaa	cagccccacg	540
aggcttcccc	tcgctcctgg	acactgcagg	ctgagcccg	tgccccgccg	cctccatgag	600
gaaggctttt	cctctgtgag	cccaggcca	cccttccct	cctttaagta	attacttaag	660
tcctttgcca	gggcccctcc	agtacccttt	ctaaagacac	ccctgcccc	gcatgctgca	720
ggctcctgct	ccactttcct	ctcaggccct	cgctcgtgtg	gtgctgcctt	tgttttctgt	780
ctctgccacg	gcagggggtc	agctccttgg	aggtaggggt	tctgcccttg	ctgtaccact	840
gcctggcaca	cagttaggtgc	tcaataaaga	cttgccagggt	gagctgcctg	aagaatagtc	900
accagaggcc	agaaatgtct	agagctctgc	cggtaggggtg	actggccgag	gagcctggcc	960
tgcatgtgtg	cgtgtgtgtg	tgtgtgtgtg	tgtgtgtgag	tcagggttta	tatgcagggtg	1020
tctacaggag	acatgctggg	ttctgtgctg	ggtgtgagga	atatgggagc	agaaccccag	1080
ggaggtggca	gagacttggg	ggccaaagg	ctgggggtgca	ggggggcaac	agccagggtgc	1140
cactggccac	cccagccgca	gggagccctg	cccaccctcc	aggtgcctgg	atgtccaacc	1200
tcactgctat	tcccacctca	agccaggcct	ggagatggag	gccccatgac	tcagccaggg	1260
ccggtttgca	gctgcggctg	accagacgg	gcgggcagcc	cccagcccc	gggcctgcac	1320
ccaggacagg	gccgcctctc	ctccctcccc	cgcttctggc	tcctaggaca	ggattctctg	1380
aattcagctc	ccctgagggt	ggggccagggt	tggaggccag	gcctgggggc	tctgggctgg	1440
ggtcccagat	aggggctggg	cggccaggct	tggaaatctg	aatccagccc	cattcctggc	1500
atctgcagga	gcctcgtggg	gagggagact	tgggatggac	ttcaaccagc	cagggctgga	1560
ttcttgcccc	ggaacctgca	ttcttggggc	agccaaggga	tccttccac	ttctgggccc	1620
agcttgcccc	tgcttgccat	tcgagcccca	tctgggctt	gggggtgtct	ccccaactct	1680
cagacataag	gacacccttc	caagcttggt	ccttcacctg	gcggggccct	gagccccaca	1740
cccctcccc	gtcctttctc	catccgacat	caagcgctc	cctgcctctg	ctcgcacagt	1800
ctctagagtg	gggaacctcag	cacctcacag	gtgggcccag	ctctgggtgc	gtctgtgttg	1860
ggggagctgg	ggcagcccc	aaaagacctt	ggagacagac	cctcagaggc	aggagcagag	1920
gctggcagtg	gatgctgtgc	ctggaggcct	tgaggccgag	gtgtgatgat	gagggcccagg	1980
ctgcagggtc	ctttctggct	ctccagctcc	ggagaacaag	ggatttctc	ctgctctgcc	2040
cacctcccc	agccagtgc	tgctcagcct	cagcacccga	cctgggcgcc	ctccatgatc	2100
tgccccacct	ggacacatgg	ctcgaggg				2128

<210> 633

<211> 2129

<212> DNA

<213> Homo sapiens

<400> 633

tctacctccg	ggctgaaacg	tcacatgcc	tccccacaga	cagacggatg	gacagatggg	60
cctccctgca	cctgctctgt	gggtgtgggg	gctcctgctc	agcagcagtt	tccagaccct	120
tctccctgct	ttccccaagc	caccgcctt	gaatctgggg	tgctctacca	gacccatccc	180
ctcattttcta	aagatttgag	ccactagtgc	tgtccctctc	cctcagaaat	gccttggtga	240
cacttggtctg	ctttcaactc	ttccacccat	ctgcctcttg	gtctcatctt	taccttctgc	300
taaaggctct	gacccccacc	cccgccacgc	catggggcac	cccatggtgg	tgctctcttg	360
ggagcagctc	tgtccctttc	cccgtggcct	ttgccccgcc	tcctatgact	tcgattccca	420
cctgtccccg	acccttggga	ccactgaccg	ggccggaatc	acctgtcact	gccctgtcat	480
ctgcttacct	cacacggtgc	tctgctgacc	caggtcttgc	tgtctcccaa	cagccccacg	540
aggcttcccc	tcgctcctgg	acaatgcagg	gtgagccgga	tgccccgccg	cctccatgag	600

gaaggctttt	cctctgtgag	ccccaggcca	ccctttccct	cctttaagta	attacttaag	660
tcccttgcca	gggcccctcc	agtacccttt	ctaaagacac	ccctgcccc	gcatgctgca	720
ggctcctgct	ccacttttct	ctcaggccct	cgtcgtgtg	gtgctgcctt	tgttttctgt	780
ctctgccacg	gcaggggggtc	agctcccttg	aggtggggct	tctgcccttg	ctgtaccact	840
gcctggcaca	cagtaggtgc	tcaataaaga	cttgccagggt	gagctgcctg	aagaatagtc	900
accagaggcc	agaaatgtct	agagctctgc	cggtagggtg	actggccgag	gagcctggcc	960
tgcattgtgtg	cgtgtgtgtg	tgtgtgtgtg	tgtgtgtgtg	agtcagggtt	tatatgcagg	1020
tgtctacagg	agacatgctg	ggttctgtgc	tgggtgtgag	gaatatggga	gcagaacccc	1080
agggagggtg	cagacacttg	ggggccaaag	ggctgggggtg	caggggggca	acagccagggt	1140
gccactggcc	accccagccg	cagggagccc	tggccacctt	ccagggtgcct	ggatgtccaa	1200
ctcacttgct	attcccacct	caagcaaggc	tggaaaatga	aggccacta	atccgccagg	1260
ggcgggttgg	cacttccggt	taacccaaac	ggcgggcgag	ccccagcccc	ctggcctgca	1320
cccaagagaa	ggcgggcctc	cctccctccc	ccgcttctgg	ctcctaggac	aggattctct	1380
gaattcagct	cccctgaggc	tggggccagg	ttggaggcca	ggcctggggg	ctctgggctg	1440
gggtcccaga	taggggctgg	gcggccaggc	ttggaatctg	gaatccagcc	ccattcctgg	1500
catctgcagg	agcctcgtgg	ggaggggagac	ttgggatgga	cttcaaccag	ccagggtctg	1560
attcttgccc	cggaaacctgc	attcctgggg	cagccaaggg	atccttccca	cttctgggccc	1620
cagcttgccc	ctgcccggca	ttcgaagccc	atctggggct	tgggggtgtc	tccccaactc	1680
tcatacataa	cgacaccctt	ccaagcttgt	tccttcacct	ggcgggggccc	ttagccccac	1740
acccctcccc	tgtcccttct	ccatccgaca	tcaagcgctt	cctgcctctt	gctcgcacag	1800
tctctgagat	ggggaactca	gcacctcaca	ggtggggcca	gctctggtgc	tgtctgtgtt	1860
gggggagctg	gggcagcccc	caaaagacct	tggagacaga	ccctcagagg	caggagcaga	1920
ggctggcagt	ggatgctgtg	cctggaggcc	ttgagggcga	ggtgtgatga	tgaggcccag	1980
gctgcagggc	tctttctggc	tctccagctc	cggagaacaa	gggatttcct	cctgctctgc	2040
ccaccctccc	cagccagtg	atgctcagcc	tcagcaccgc	acctggggcg	cctccatgat	2100
ctgccccacc	tggacacatg	gctcgaggg				2129

<210> 634

<211> 2132

<212> DNA

<213> Homo sapiens

<400> 634

tctacctccg	gcctgaaacg	tcaccatgcc	tccccacaga	cagacggatg	gacagatggg	60
cctccctgca	cctgctctgt	gggtgtgggg	gctcctgtct	agcagcagtt	tccagaccct	120
tctccctgct	ttccccaagc	cacccgcctt	gaatctgggg	tgtcttacca	gacccatccc	180
ctcatttcta	aagatttgag	ccactagtgc	tgtccctctc	cctcagaaat	gccttggtga	240
cacttggtctg	ctttcaactc	ttccaccocat	ctgcctcttg	gtctcatctt	taccttctgc	300
taaaggctct	gacccccacc	cccgccacgc	cacggggcac	cccatggttg	tgcgtccttg	360
ggagcagctc	tgtccctttc	cccgtggcct	ttgccccgc	tcctatgact	tcgattccca	420
cctgtccccg	acccctggga	ccactgaccg	ggcccgatca	ccctgtcact	gccctgtcat	480
ctgcttacc	cacacggtgc	tctgtgacc	caggtcttgc	tgtctcccaa	cagccccacg	540
aggcttcccc	tcgctcctgg	acactgcagg	ctgagcccg	tgccccgcg	cctccatgag	600
gaaggctttt	cctctgtgag	ccccaggcca	ccctttccct	cctttaagta	attacttaag	660
tcccttgcca	gggcccctcc	agtacccttt	ctaaagacac	ccctgcccc	gcatgctgca	720
ggctcctgct	ccactttcct	ctcaggccct	cgtcgtgtg	gtgctgcctt	tgttttctgt	780
ctctgccacg	gcaggggggtc	agctccttgg	aggtggggct	tctgcccttg	ctgtaccact	840
gcctggcaca	cagtaggtgc	tcaataaaga	cttgccagggt	gagctgcctg	aagaatagtc	900
accagaggcc	agaaatgtct	agagctctgc	cggtagggtg	actggccgag	gagcctggcc	960
tgcattgtgtg	cgtgtgtgtg	tgtgtgtgtg	tgtgtgtgtg	tgagtcaggg	tttatatgca	1020
gggtgtctaca	ggagacatgc	tgggttctgt	gctgggtgtg	aggaatatgg	gagcagaacc	1080
ccaggagggt	ggcagagact	tgggggccaa	agggtgggg	tgcagggggg	caacagccag	1140
gtgccactgg	ccaccccagc	cgcaggggagc	cctgcccacc	ctccagggtg	ctggatgtcc	1200
aacctcactg	ctattcccac	ctcaagccag	gcttggagat	ggaggcccca	tgactcagcc	1260
agggccgggt	tgcagctgcg	gctgaccacg	acggggcggg	agccccacg	ccccgggctt	1320
gcaccagga	cagggccgccc	ctccctccct	ccccgcctt	tggctcctag	gacaggattc	1380
tctgaattca	gctccctga	ggctggggcc	aggttggagg	ccaggcctgg	gggcccctgg	1440
ctgggggtccc	agataggggc	tgggcggcca	ggcttggaa	ctggaatcca	gccccattcc	1500
tggcatctgc	aggagcctcg	tggggaggga	gacttgggat	ggacttcaac	cagccagggc	1560
tggattcttg	ccccggaacc	tgcattcctg	gggcagccaa	gggatccttc	ccacttctgg	1620
gccagccttg	gccctgcctg	gcattcgagg	cccatctggg	gcttgggggt	gtctccccaa	1680

ctctcagaca taaggacacc cttccaagct tgttccctca cctggcgggg ccctgagccc	1740
cacaccctc ccctgtcctt tctccatccg acatcaagcg cctccctgcc tctgctcgca	1800
cagtctctga gatggggaac tcagcacctc acagggtgggc ccagctctgg tgcgtgtctgt	1860
gttgggggag ctggggcagc ccccaaaaga ccttggagac agaccctcag aggcaggagc	1920
agaggctggc agtggatgct gtgcctggag gccttgaggg cgagggtgtga tgatgaggcc	1980
caggctgcag ggctctttct ggctctccag ctccggagaa caagggtatt cctcctgctc	2040
tgcccaccct ccccagccag tgcattgctca gcctcagcac cgcacctggg cgccctccat	2100
gatctgcccc acctggacac atggctcgag gg	2132

<210> 635

<211> 290

<212> DNA

<213> Homo sapiens

<400> 635

gatgtgtgtt tgtgtgtgtg tgtgggtgtg gtatgtgtgt ggtgtgtgtg tgtgtgtgtt	60
gtatgtgtgt gtgtgggtga tgtgtgtgtt tgtgtgtgtg tgggtgtgtg atgtgtattt	120
ctttgaatga gaaattggct cccatgatta tggagctgac aactcccaag gtctgcaggc	180
agcaagctgg aggccagga gggccggtgg tgtggctgca gccggtgtct gaaggcctga	240
gaaccaggag ggcgggtggg gcagctgcag tgtgaaagcc ggcaggctcg	290

<210> 636

<211> 96

<212> DNA

<213> Homo sapiens

<400> 636

ccaacatggt gaaaccccg cttactataa aatacaaaaa ttagccgggc atggcggcac	60
gtgcctgtaa tcccagctac tcaggaggct gaggca	96

<210> 637

<211> 2649

<212> DNA

<213> Homo sapiens

<400> 637

cttgtaggta ctcattgagg tttatttgtt aagatgaatg aatgttgcaa attcctaacc	60
atgtgattca gatgcccaat cttactctgt tactttatga aaatttttta aagctatatg	120
atgttatatc aaaatatgtt gttatacttt aggataatcg gtgtgttagc cctgaatttc	180
agcataagtc ccatTTTTTT ccatgggagt ctaggaaagc tatatgttta ttcagcagca	240
aaatacagtt tggaacttaa ataaactatt gatcaatttc tggctcttatg ctagaaggaa	300
taaagcatca agaaaaagaa aagatttgcg gtcaagacca ggaaaaattg acaatagagt	360
attagaatgc aggaatgag gggaaagtga aaggcagcaa gtaggagaga aaaagtgcag	420
ggacagtaga aagtgaatgt aggagctttc tgacccatgc acttcaggaa cgcaattcat	480
ccctaaaatg ctgtttgctg tcttaggttg caagtaacca aattaaaacc agtttgaaag	540
tagagtgaga cagctgtcat cataagagtc atttgatctg tttaaagggtg gctgcttgta	600
tgcaggggacc aacagtcattg ttcaggggcag cagctgggtgc acacttcaag cacagaccat	660
aagagctacc ccaggcagca cctgctacca atagtgcata caactcagag agacctcggt	720
ggcataaggg aatactctat cctttctgag taaagagcaa gtagaactaa aggtttcaca	780
ttttaaacat actttacatt cctcctcttc tggggctcaa gcctactttt gggccaaagc	840
ggatgttata tctgacatag agtcctcgga gcagcagttg ttcttgaaag ttctttttg	900
catctttgtg cctcatgcag tggcttacia gtcaaccaga cttctcccct gacttttgat	960
gtgtaagagc ttgtgtttca aatgggtttg gttttcttaa tgtcacccta gggttggtgga	1020
aaggagagta aatggaaatg gggggagcag ggtcccctgg ggagggttaa acagatggaa	1080
gtcaattgtc tcttgagaat agaggaggct attgagtttt cattccacac tctgtcctctg	1140
ttctgtcagc aaagaacaag cactactctc cagcaattgc tttccactgg actccccac	1200
ctcgccctcc ctacaaaaac ctagggtatca acttagttca ctccaaatta gaaaatttaa	1260
tagtcatattg tttcttcttg tccacaggga gaaccatttt ctttcttctt ttcaaaattg	1320
cccaggctct gtgaagggtt attaacaccg gaaagaaata cattttaata agcttaaatc	1380
tcatttctac atgaaaccat cagatttttag tactgtgata ttttggtccc tctgtctttt	1440
aggctctgac accaaaattg ccataatgaa ggtgtttcac ttcttctcat ttatttttat	1500

gggatctttt	attcccaaat	gccttttcat	cccagccaaa	gggagaaatg	ttgatagatc	1560
tgccatcaag	aaggttccaa	agctggcctg	tcagggttttc	tgttttcttg	tttattatct	1620
ttgaactttt	gttttaaatg	ttttaaacac	ttattttacca	tgtaactaaa	tgtctgatag	1680
tattgaaaat	actttgtggg	ttttaattta	tttaatgctc	atgaaaccct	atgaggtagg	1740
tactgatatt	atttttatgt	tactgatgag	gaaagtgaag	caaagagaag	tgaaatgaaa	1800
ggtagtgagt	gatgggacca	gggtttggac	atgggcagtc	tggtctctaaa	atgtatgctt	1860
ttactacta	tgtaatgctg	cctcacaaac	aacttgctctc	acaaattgat	attctggatc	1920
agaggatgtc	gactggcccg	caaattgtatt	ttgtatggct	catacacagt	tcagaagttt	1980
taaaaattta	catagaaatc	tgcatttcct	gacttctttt	gaaaatggga	ataccaaaca	2040
tcattaggtc	tgaattccca	atacggcaac	aacagctgag	caacaagcag	ctgttttagac	2100
taggcactcg	ctctccaatt	tccacagtcc	ccaccaatgc	agatcatagt	atcgacttaa	2160
atctctgccc	tgcccttagag	aagcttctga	gcttgtgacc	tctattctag	ctgctctatg	2220
aatggacgct	gccccagtac	agcggaggacc	tgctgcaaaa	tgcatttcct	agtcttcaat	2280
acttattcct	ccttgtaact	ggatttctgg	taagttatgt	ctcatgggtg	atctgccccca	2340
aagatggaga	ctgaatggca	gtgagtcact	cgccttggcc	tccattgttc	tgagagaagg	2400
tccagccaca	tggttgatgt	cagctgggtt	tccagagcca	gagctgggtt	gcgggacaga	2460
cacacctgca	tctaatagtg	aaaggcaaa	ttgaaaggcc	aagaccagcc	tgagggtctga	2520
gggaccaagg	gcttccacaga	ggccagaagt	tcagagggtg	acataaaaagg	tgtaggagaa	2580
ataaggaagt	gaaaagaaca	tagtacagtg	tatcagagga	ggagctccag	gctgggcaaat	2640
atcactccc						2649

<210> 638

<211> 2649

<212> DNA

<213> Homo sapiens

<400> 638

cttgtaggta	ctcattgagg	tttattgtgt	aagatgaatg	aatgttgcaa	attcctaaac	60
atgtgattca	gatgcccatt	cttactctgt	tactttatga	aaatttttta	aagctatatg	120
atgttatatc	aaaatatgtt	gttatacttt	aggataatcg	gtgtgttagc	cctgaatttc	180
agcataagtc	ccattttttt	ccatgggagt	ctaggaaagc	tatatgttta	ttcagcagca	240
aaatacagtt	tggaacttaa	ataaactatt	gatcaatttc	tggtcttatg	ctagaaggaa	300
taaagcatca	agaaaaagaa	aagatttgct	gtcaagacca	ggaaaatttg	acaatagagt	360
attagaatgc	aggaaatgag	gggaagtggg	aaggcagcaa	gtaggagaga	aaaagtgcag	420
ggacagttaga	aagtgaatgt	aggagctttc	tgacccatgc	acttcaggaa	cgcaattcat	480
ccctaaaatg	ctgtttgctg	tcttaggttg	caagtaacca	aattaaaacc	agtttgaaag	540
tagagtgaga	cagctgtcat	cataagagtc	atttgatctg	tttaaagggtg	gctgcttgta	600
tgcagggacc	aacagtcacg	ttcagggcag	cagctgggtc	acacttcaag	cacagaccat	660
aagagctacc	ccaggcagca	cctgtacca	atagtgcaaa	caactcagag	agacctcggt	720
ggcataaggg	aatactctat	cctttctgag	taaagagcaa	gtagaactaa	aggtttcaca	780
ttttaaacat	actttacatt	cctcctcttc	tggggctcaa	gcctactttt	gggcccgaagc	840
ggatgttata	tctgacatag	agtccctcga	gcagcagttg	ttcctgaaag	ttcctttttg	900
catctttgtg	cctcatgcag	tggcttacaa	gtcaaccaga	cttctccctt	gacttttgat	960
gtgtaagagc	ttgtgtttca	aatgggtttg	gttttcttaa	tgtaacccta	ggttggtgga	1020
aaggagagta	aatggaaaatg	gggggagcag	gggtccctgg	ggagggttaa	acagatggaa	1080
gtcaattgtc	tcttgagaat	agaggaggct	attgagtttt	cattccacac	tctgctcctg	1140
ttctgtcagc	aaagaacaag	cactactctc	cagcaattgc	tttccactgg	actccccac	1200
ctcggcctcc	ctacaaaaac	ctagggatca	acttagttca	ctccaaatta	gaaaatttaa	1260
tagtcatttg	tttcttcttg	tccacaggga	gaaccatttt	ctttccttct	ttcaaaattg	1320
cccaggtctt	gtgaagggtt	attaacaccg	gaaagaaata	cattttaata	agcttaaattc	1380
tcatttctac	atgaaaccat	cagatttttag	tactgtgata	ttttgggtccc	tctgtctttt	1440
aggctctgac	accaaatttg	ccataatgaa	ggtgtttcac	ttcttctcat	ttatttttat	1500
gggatctttt	attcccaaat	gccttttcat	cccagccaaa	gggagaaatg	ttgatagatc	1560
tgccatcaag	aaggttccaa	agctggcctg	tcagggttttc	tgttttcttg	tttattatct	1620
ttgaactttt	gttttaaatg	ttttaaacac	ttattttacca	tgtaactaaa	tgtctgatag	1680
tattgaaaat	actttgtggg	ttttaattta	tttaatgctc	atgaaaccct	atgaggtagg	1740
tactgatatt	atttttatgt	tactgatgag	gaaagtgaag	caaagagaag	tgaaatgaaa	1800
ggtagtgagt	gatgggacca	gggtttggac	atgggcagtc	tggtctctaaa	atgtatgctt	1860
ttactacta	tgtaatgctg	cctcacaaac	aacttgctctc	acaaattgat	attctggatc	1920
agaggatgtc	gactggcccg	caaattgtatt	ttgtatggct	catacacagt	tcagaagttt	1980
taaaaattta	catagaaatc	tgcatttcct	gacttctttt	gaaaatggga	ataccaaaca	2040

tcattaggct	tgaattccca	atacggcaac	aacagctgag	caacaagcag	ctgttttagac	2100
taggcactcg	ctctccaatt	tccacagtcc	ccaccaatgc	agatcatagt	atcgacttaa	2160
atttcctgcc	tgcccttagag	aagcttctga	gcttgtagcc	tctattctag	ctgctctatg	2220
aatggagcgt	gccccagtac	agcgaggacc	tgttgcaaaa	tgcatttctt	agtcttcaat	2280
acttattcct	ccttgtaact	ggatttctgg	taagttatgt	ctcatgggtg	atctgcccc	2340
aagatggaga	ctgaatggca	gtgagtcact	cgccttgccc	tccattgttc	tgagagaagg	2400
tccagccaca	tggttgatgt	cagctgggtt	tccagagcca	gagctgggtt	gcgggacaga	2460
cacacctgca	tctaatagtg	aaaggcaaag	ttgaaaggcc	aagaccagcc	tgaggtctga	2520
gggaccaagg	gcttcacaga	ggccagaagt	tcagaggtgg	acataaaaag	tgtaggaga	2580
ataaggaagt	gaaaagaaca	tagtacagtg	tatcagagga	ggagctccag	gctggcaaat	2640
atcactccc						2649

<210> 639

<211> 190

<212> DNA

<213> Homo sapiens

<400> 639

atgagaaagt	aaacatacaa	cacagtaaaa	gttggtccaa	gtatttaaaa	atgttctata	60
tcttctacct	tattatggct	caagatatag	taacttttgt	ggggttttat	cattgttttt	120
gttttatttt	gtgaaaacat	ccaagagccc	gcaacagcct	atagatttgc	agatcctttt	180
ctttcctggg						190

<210> 640

<211> 190

<212> DNA

<213> Homo sapiens

<400> 640

atgagaaagt	aaacatacaa	cacagtaaaa	gttggtccaa	gtatttaaaa	atgttctata	60
tcttctacct	tattatggct	caagatatag	taacttttgt	ggggttttat	cattgttttt	120
gttttatttt	gtgaaaacat	ccaagagccc	gcaacagcct	atagatttgc	agatcctttt	180
ctttcctggg						190

<210> 641

<211> 21501

<212> DNA

<213> Homo sapiens

<400> 641

gaggctctgg	tcataatggc	gaccacactt	ttattgaata	tctgttgtgt	actgtccagg	60
tcttcacatt	tgtcacctca	tttaattctc	atgttaagcc	tgagtggaaa	gcattatgaa	120
gcccatttga	ggaagagaa	gagtgaagtt	cagaggcaaa	agtcattctgt	ccagggtcct	180
ttgcaaatg	acagctggca	tggaaccctc	ctaaggctga	ttcctctatc	ctccttctcc	240
taacagcact	tcaggggcaa	ccttctctct	tatcttttct	ccactcacca	tcaaagaagc	300
cctcaatttc	ccaggattct	aggacatttc	cctaagggtg	gggtgggtgg	acaggtagta	360
agactgatgc	cttttaactt	tccaagacct	ttcttttatt	cctgagatga	ataaataagt	420
ggcaatgggg	tgtggggatg	tggtgaacac	agaacaggaa	ctggcagcat	gcagctggca	480
ggaggggagc	gtgatggccc	caccctgtg	aggaccacct	aatcctaagc	agggggccaaa	540
gctctagcag	ccaccattaa	ggaaaaactt	ttgaaattca	cacattgtga	agcctgccag	600
tccccgccag	gtgaagagct	catggatatc	accttcagg	ctacttttta	ccccaggggc	660
cttgtctgcc	cgggcctggg	tacctgggct	gctctgtaag	gcaggtaggg	gtgcttacc	720
cactctcaaa	aataaaccaa	gctgtcctga	gtgtccagca	ggaggggcagc	ccaagctctg	780
ggggcagcgt	gggtgggagg	aggtcctaca	gggtggggcc	gcgattatct	gcccttgatg	840
aagccctcca	gcacacgggtc	actgcgtctc	gacaaccagt	agccagtcct	ggccgccaca	900
gccccaatga	agatggcggt	gaacaccaag	tcgcccttag	cagccagcgt	ggccagtga	960
cagatgatga	tgcaaagaa	catctgctgc	agcaccacca	actcgtcttc	tgatcatctc	1020
gagaagaagc	ctgctgactc	tgacagagg	caagagatgc	agcctggcac	tcgtatccct	1080
gttctctggta	gttcttggag	tctccccaga	actccacac	acctgatcat	catggccacc	1140
aggcctgcc	agcaagccag	gcacactaca	tttactgctc	aaaaccaccc	tgcaaggggc	1200
agttaccatc	cctgtctcac	taaattggaa	agtgaggctc	agagaggtaa	aggggttgg	1260

cttgccaagg	ccatgtgggtg	gacaagttgg	gggcagagca	tttattacgt	gtatgagtct	1320
cgttccacgg	tcagactgtc	tggattggga	tcccagcttt	gcgacttgct	tgccatatag	1380
ccctgggaaa	gtagcttcat	ctctctgcat	cttcattttt	acatatgtag	agtggggatg	1440
agaacccaac	ttccagcgtc	gggttgtttc	aggggttaaa	tcagttaaga	tggggaatgc	1500
acctagaaca	gcacttgaca	cagtaattgc	tggggaaatg	gtccctgcc	tcacgttgt	1560
gattaccctg	catctcacca	cacccccggc	ctaggacagc	tctcagcagg	ccagggcaaa	1620
cactgggtccc	attggataga	tgaggaaaca	ggttaaggag	gcagactgat	ttgatgccag	1680
gtctgattcc	ctttgtaccc	tgggaaggat	aaggctgctg	agagccaacc	tggagatcag	1740
atgtagagcc	cggctctcagt	gcagcctcca	gggggctggg	tggcagtagg	gatggggcag	1800
ggcctggagc	tgccactgct	acctggggaa	ggggcttgcc	tgcccttctc	ttgaatgagg	1860
acctcccctc	ccccgcccc	gggctcacct	gggatctgct	ccttcacaca	gatgccttcc	1920
atctgcttgt	agccctcggc	acagatgcag	cgataaccgc	cctcgggtgt	ttcacactgc	1980
ttgttctctc	ccggacacac	ctctgtctca	cactcatcca	catcttgagg	ggagggaggg	2040
gtcagagtcc	tgctaggggc	ccccacccag	caccctgact	ccatcttgct	catctctcaa	2100
cactcccctc	tgcccttgcc	caggcaacat	tccacccttc	cttcccccac	ctgcccata	2160
tccagcctct	tcaccattca	tgctgggtga	ggcactccca	ggtgcctgtg	tcccatcagc	2220
aggagactca	ccgagacact	tggagccccc	ctgctgatag	ccagggctac	acttcttaca	2280
gcgacctggc	cctggccccc	tgacgcttag	gcaggccttg	gcacagtctg	gagagaggag	2340
agaaagatga	gggtgagatg	tgcacctagg	ccacggggag	ccacgctcca	gaagcggagg	2400
cctgggggtg	ctctgaagcc	tgagaagggg	aaggtttgga	gggacaggtg	tggagcagct	2460
cttctccac	tcctcacgtc	ccctcctctg	cagaagtaga	cactgacctc	ggcactcata	2520
ggagccctca	gtgttcacgc	agaattgggtc	agctccacag	ttggctccct	ctgtgccaca	2580
ctcatcaatg	tctgcagaga	ggtgagcagg	gtgagaattt	caatccctat	ttagtaggga	2640
agctgaagcc	agagccgttg	gggaatgggtc	ttgcctggga	ttaaatggta	tggcagagac	2700
tgcaagctgt	ctaccaacac	agaagcagac	tagctggact	tcaggctgcc	cagccagaga	2760
ccacatttgc	caacctgtct	tgaagctaag	tgtgtccctg	tgattgagtt	ctggccaaca	2820
ggatgtaaac	aggagtgatg	agctccaccg	ttagcttggt	cttaaaacaa	tgcttggtg	2880
cctcaatgca	ctttctttcc	cttctccctt	cctgagtgtc	ggcatgtggg	acacagagat	2940
gcccaggact	cagcttcaac	catgcagaca	acgccaagg	ggatgattgt	gcagtaagtt	3000
acaggaataa	tctgggtact	ggaatgatta	tgactagcag	agctcccctg	ccagcctgga	3060
ctactacttt	tgggactgta	atatgataaa	aaaaataaaa	cctctaccct	ctagattctt	3120
tttttttttt	ttgagatgga	gtttcgtctc	tgtcaccagg	gctagagtgc	aatgggtgtga	3180
tcttggctca	ctgcaacctc	tgctcctggg	attcaagcga	ctctcctgcc	tctgcctccc	3240
gagtagctgg	gattacaggc	acctgccacc	atgcctgggt	aaatttttgt	atttttagta	3300
cagacagggt	tttgccatgt	tggccaggct	ggctcgaac	tcctgacctc	aggtgatcca	3360
ccccacttca	gcctctcaaa	gtgctgggat	tagaggcgtg	agtgaactac	cacacccagc	3420
caacctctat	actctttaag	ccacagtctt	ttggggattt	ttgttacagc	agcttagcct	3480
ttactttagt	ctatataagt	ggctaggctg	ggaccaaacc	aagtcttgaa	ccagggtttc	3540
ctgaccccaa	gttcagtgtc	ctcattctcc	tagccaaccc	ttcctcattt	tttttttttt	3600
tttttttttt	ttttgagatg	gagtctccct	ctgttgccca	gactggagtg	cagtgggtgcg	3660
atctcggctc	actgcaagct	ccgcctccca	ggttcatgcc	cttctcctgc	ctcagcctcc	3720
tgagtagctg	ggactacagg	cacccgccac	cacgcccagc	taattttttg	tatttttagt	3780
tgagacaggg	tttcaccatg	ttagccagga	tggctcgtat	ctcctgatct	catgatctgc	3840
ccgccttggc	ctcccaaagt	gctgggatta	caggcgtgag	ccaccgcgcc	cagccccctc	3900
ctcaattttt	aggacttggc	caaagtaacg	cctcctccaa	gaagcctttc	ctgattcccc	3960
atcaccactt	ccactgaact	agatcagagg	catctctcac	tgtacacagg	gactatacta	4020
cacagtacct	gtgtactgga	ctgtaagtat	ctggttactt	ttctgccttc	ccagccaggt	4080
tgagatctcc	atgaagggtg	agactaggct	agtctagccc	aggcttgtgt	tgagagaata	4140
aaggaccaag	cccaggcccc	tgaccatctt	cccagacctc	gctagggccc	cacttaccta	4200
cacacttgag	gtgatgcagg	gcccagccct	tcttgcatgg	caaacagttt	gattcctcag	4260
gtcctgagca	tcgggcacag	gggcccacac	aagctgggtg	gaatgggggc	agcatgagga	4320
tgggcaggca	gggtgcccat	ctgcccctgc	ccagtgccac	accttttggc	tacctaccgc	4380
aacataccag	atggctggcg	ttgcgttctg	cctcaaagta	gccaaggcca	cactggccac	4440
aggcctcacc	cccgtagccg	gcttggcagt	cacagtgcct	gctgccccct	cgtgtccctt	4500
ctccttcaca	ctgcccgtag	ccaccgcagg	gcctctctgt	tccccagga	caggctgtgg	4560
gaagacacca	aaccaggtga	ggtcatctat	acaaccttga	tatacaagat	aatattttct	4620
cctctcctct	ctcctctctc	cttgccttcc	ctccctcccc	ccctccccct	ccctccccct	4680
tttccctctc	cctctcccca	tggcctccct	ctccctctcc	ccatgggtctc	cctctccctc	4740
tctttacacg	gtctccctct	gatgccaaag	tgaagctgga	ctgtactgct	gccatctcgg	4800
ctcactgcaa	cctccctgcc	tgattctcct	gcctcaacct	gccgagtgcc	tgcgattgca	4860
ggcgcgcgcc	accacgcctg	actggttttc	gtattttttt	gggtggagacg	gggtttcgct	4920

gtgttggccg	ggccggtctc	cagctcctaa	acgcgagtga	tccgccagcc	tcggcctccc	4980
gaggtgccc	gattgcagac	ggagtctcgt	tcactcagtg	ctcaatggtg	cccaggctgg	5040
agtgcagtg	cgtgatctcg	gctcgctaca	acctccacct	cccagccgcc	tgccttggcc	5100
tcccaaagt	ccgagattgc	agcctctgcc	cggccaccac	cccgtctggg	aagtgaggag	5160
cgtctctgcc	tggcggccca	tcgtctggga	tatgaggagc	ctctctgcca	ggctgcccag	5220
tctggaaagt	gaggagcgtc	tctgcccggc	cgccatccca	tctaggaagt	gaggagcgtc	5280
tctgcccggc	cgcgaccccg	tctgggaggt	gaggagcgtc	tctgcccggc	cgccctgtct	5340
gagaagttag	gagcccctcc	gcccggcagc	cgccccgtct	gggaagttag	aagtgtctcc	5400
gcccggcagc	cagcccgtcc	gggagggagg	tgaggggggtc	agccccccgc	ccggccagcc	5460
gccccgtccg	ggaggtgagg	ggcgccctctg	cccggtctgcc	cctactggga	agtgaggagc	5520
ccctctgccc	ggccaccacc	ccgtctggga	ggtgtacca	acagctcatt	gagaacgggc	5580
caggtatgaca	atggcggttt	tgtggaatag	aaagggggga	aaggtgggga	aaacactgag	5640
aaatcggatg	gttgctgtgt	ctgtgtagaa	agaagttagac	acgggagact	tttcatTTTTg	5700
ttctgtacta	agaaaaattc	ttctgccttg	ggatcctgtt	gatctatgac	cttatcccca	5760
accctgtgct	ctctgaaaca	tgtgctgtgt	ccactcaggg	ttaaattgat	taagggcggt	5820
gcaagatgtg	ctttgttaaa	cagatgcttg	aaggcagcat	gctggttag	agtcatacc	5880
actccttgat	ctcaagtacc	cagggacaca	aacactgcgg	aaggccgcag	ggtcctctgc	5940
ctaggaaaac	cagagacctt	tgttcacttg	tttatctgct	gaccttcctt	ccactatgt	6000
cctatgacct	tgccaaatcc	ccctctggga	gaaacacca	agaatgatca	ataaaaaaga	6060
caaaaaaaca	aaaaaaacaa	gataatattt	tctgctctgc	atatcagtaa	acatttttgg	6120
agaagaaaat	taattttaat	gacataatat	tttgtcataa	aactgacatt	tacttaacca	6180
atttccctctt	gtggaacaat	tagattttac	agacctttta	tttattttatt	tattttattta	6240
tttattttatt	tattttattta	tttttagtga	caggggtctcg	ctctgtttcc	caggcaatga	6300
catgatcata	gtcactgca	gcttcgaact	cctgggctca	agcaatcctc	ccacctcagc	6360
ctaggggaaac	tgttgggatt	actaccatgc	cccactattt	tttttttaag	agacagggtc	6420
ttgctctact	accaggctg	gtctctcaaa	ctcctggcct	caagtgatcc	tcctgcctca	6480
gcctcccaaa	gtgctgggtt	tacaggtagc	agccactgga	ccaaatattt	tccttttttt	6540
ttttgagaca	gagtctcgct	ctgtcgccca	ggctggagtg	cagtggcatg	atctcggtc	6600
actgcaagct	ccgcctgccg	ggttcatgcc	attcttctgc	ctcagcctcc	agagtagctg	6660
ggactagagg	cgccccccac	catgccgggc	taattttttg	tatttttttag	tagagacggg	6720
gtttccacct	gatagccacg	atgggtctga	tctcctgacc	tcagtatcca	cccaccgcag	6780
cctcccaaac	tgttgggatt	acagggttga	cccaccgcgc	ccagccaata	ttttctttta	6840
caaagactga	atttgccatc	tttgtagcta	gctctttatc	tgtagcttca	ggaaagactg	6900
ctctaaaaga	ggctggtagt	aagttcagct	cttgtgccag	gactgtgtgt	gaggatggat	6960
ggcgatcatg	gaggctccag	gtcagcacc	gcccctcccc	aggaaggtac	catagtccga	7020
tctggcatgg	gaaatgaagg	ggctgggaag	tctatcattt	cttttagtaca	tgatgataac	7080
tatactgcat	atgactcagt	ctagccccctg	tgttttctcc	aagcctttcc	ccactgattt	7140
gcccctctcc	ccagccctgt	caggcaggca	agaactgagg	tccagagaag	tttatctgag	7200
tagcctgagt	tcacacagcg	aactagggac	agagccagga	ctggatccct	ggactcggtg	7260
gtccccctcc	atcccccaaga	gcaacttaaa	aactcacgaa	ggcaggaggg	cccgaagggtg	7320
cctgcggggc	agcagagctt	cagggaatct	gagcacagcc	actggaagag	gtccggggcc	7380
tcctgctgcc	tgaggcaggg	gcagggttga	gggaggtggg	gaggaggtgc	tgagatagtg	7440
tcataagtgc	tgttcccat	cccccatgcc	tgaatctgtg	attcaaccca	gcttgacat	7500
aagacccaaa	aggccatctg	accaatgccc	tttccctatt	tggcagaagg	gtaaactgag	7560
gctcaaagt	gagcgcaagt	ccccggcaa	gttcttagca	gacctgggtt	tgggaaggagc	7620
acaaccagga	catgggcccc	agcatgcacc	cccctgtctc	tcggccaaat	caggccttat	7680
caccaggcct	cacctgtgac	ccacttccag	ggaaggccct	ttgccactca	cttgtgaaac	7740
caccagctct	ccaccagctc	ctcactcagc	tccagcaggc	ggtggcactc	gaagtctgac	7800
ttgctgcaca	cacctccag	cacctctacc	aggcgggtct	cactgatcgg	acagggcagg	7860
ctggtggga	aacatgcccc	accccaccca	ccacctctct	caagtctctc	tccaccttc	7920
ctcgtgcggg	gaaaatatca	aaggagaggc	catgaggtat	aatggaagg	gtcatgggtt	7980
tgggaagcag	agagacctgg	gttcaaatct	agtggtagat	ctagtgggca	agtcacttaa	8040
cctctctgaa	cctctttgtt	ttgtcatctg	taaaatgggg	atgacaatac	cttccctgca	8100
ggtttgttgt	aacatacatc	agttcctgca	tctgagcaat	ggaatataat	acccttgctg	8160
ggtagatatg	gctaaaaata	catcctataa	caagtgttgg	cagggatgtg	gagaaattag	8220
aatcctccca	cactgcagg	gggaatacaa	aatggcatca	ccactgtgga	aaagcagttc	8280
ctcaataagt	aaaacatgga	attgcatag	gacctgccaa	ttccactact	ggatatagac	8340
ccaaaagaat	ggaaaacagg	tgttcaaacg	aaaactgtga	gacaatgttc	atagcagcac	8400
tattcacaac	agccaaaagg	tagaaacaat	gcagatgtcc	atcaactgat	gcatggttaa	8460
acaaaatgtg	gtacagccaa	atgagaatat	tattcagcca	taaaaggaa	taagtattga	8520
tatatgctac	ggtatgggtg	aaccttgaaa	acattatgct	aagtgaact	agccagacac	8580

aaaagggccac	atatttttatg	attccaatga	aatcagcaaa	tccataatft	ctgcttgact	8640
aacacaaatt	agtgattgcc	aagagccgag	ggaaggggag	aatagggagt	ggctgtgtaa	8700
taggtatagg	atftttttggg	ggggtaatga	aaatgttctg	gaactacata	gtgggtgatgg	8760
ttacacaaca	ttgtaaatat	tattaaatgt	ctttaatggg	aaatftttta	tgtgtatftt	8820
accacaaata	tatacatata	tatatatata	tacgcatata	tatacgaca	tatatatacg	8880
cagacatata	tgcaatata	tatacacaca	catatatata	tacacacaca	catatatata	8940
cacacatata	taaatatttg	atgtcttata	tctgtatftt	aaagggctg	gcacagtgc	9000
tggcatatag	gaggtgattt	aaaaaagcaa	gcaacgcagg	agccattaca	aagctggaag	9060
tgctctggg	gttgtcttag	ccaatccctt	cattcctgaa	tgaggaaact	caggcccgcc	9120
gaaggaaaag	agaaaatgac	caatgttaca	taataacaaa	acftttatft	ctagtgggca	9180
ttccagttaa	gcctftttcca	cacttctatg	aaataggcaa	accaggtatt	aatatcccca	9240
ttttacaggt	gaagaaactg	tggtcttgag	aggttaagaa	ccgacaacca	ggtctaactc	9300
tgagcctttg	ctgactcctc	ttccatctga	ctttgaaaag	ctggagggct	cagggtctcg	9360
ctttctgtat	ccttcccatg	cctttcttta	catactgact	atataaatgg	ctttctgtat	9420
tacatatatt	gactatataa	tggttttctg	tatccttccc	atggctttct	ttacatactg	9480
actatataat	gacaactctc	aaattcctgt	ttccaattcc	tactcttttc	tgaattccag	9540
atttgtatgg	agtctacctg	gatgtctaatt	ggacatttca	gcccaatag	ttcaaagaac	9600
accacatccc	acccttcccc	taaaccttct	cggtttcgca	tctcaccatc	ttagaaaaca	9660
gctgcactac	tcaccagttt	gctcaggccc	aaaatctagt	aagcatcttt	tattctactg	9720
tttctctata	cccataatga	atctatcacc	aggctctatt	gttctctctg	caaaatatac	9780
ccagactgtg	acctcttcat	catgtcctcc	actagatacc	acactagctt	gtgttgccct	9840
tgtacctaga	tgatgcactt	gcctcccaaa	ctggctctcc	tgtctcctcc	gcccttgccc	9900
cttacaatcc	gtttgctaca	tagcagtgtg	agtaatcttt	aaaggtgtag	agaagacagt	9960
atcacttttt	ctgtcatag	cctccaaga	gcttccatt	acactccaaa	aaaaatctaa	10020
actcttttct	gtagccctcg	aggcttaagc	ctttgccttc	accttctagc	actctccctt	10080
tggtcactc	cactccagcc	acttctcaaa	tacaccaagc	tcagtcccat	cctctgccc	10140
attccctccc	tgtcacatag	ctcgcttctt	cacttctgt	ctctctgttc	aaatgccaaa	10200
ccttgaaacac	cttgctctcc	accgtcctgc	agtctaccgt	gcttccactgt	ttgttcttca	10260
tctgacataa	tattattcac	ttactcattc	actgcttgtc	ttctctacta	gaatgtgagc	10320
tccaggaagg	gggcattttg	cttgcttgt	ttactgctat	actatagatg	ttcagtgtca	10380
ttgtttgaat	gaataagtg	tccccaagag	ctctagccc	tacaccagca	gagcagagat	10440
ttggcgggga	ggggaatata	cacccttcc	cccagcagcc	ccttacctgt	ctttgtatft	10500
ggacaaaatt	tcttctctcc	aggcagtgtt	tccacctcca	aagttgtccc	ggatggttct	10560
ctccaggccc	tggaaacaga	aaattagtaa	tagctaagta	cagtgcctgg	cacatgctag	10620
cacttccactg	ttctactgac	taggaaactg	aggcacagaa	aggcaacctg	cctagggcca	10680
tacaactagt	aagagaccaa	gatgaaactt	aaatccacgc	agatttgcat	cccagagttc	10740
cccactctaa	atcgctgtgt	tccctctaa	cgaggctgcc	ggtgcaccca	ccttgttaaa	10800
gctgtcaacc	agtcctcgcc	aggatgaca	cggatggggc	tgaggcgggg	gagaagactg	10860
gggaggtgga	gagggctgga	gccagatagg	tcttgggagg	ttgaggaaga	ggctgaggcc	10920
ccagagcaca	gctgggacta	ggccttctcg	gggccatggg	gccatcttta	cccaggctgg	10980
ggacctgcag	atagaggggc	tggagaggct	tactgaagg	agtcaggccc	cacgcgagaa	11040
agaaaaagg	ctgttctaag	gtgccgtggc	gctgggatct	gcgttattac	aagcaaaaaga	11100
ggccaaactg	ggtattgcag	gggctgtggg	gatgggtggg	gaaaggcgca	taagatgcaa	11160
ttccagaaga	gaaataagtt	atcctcgcta	gcatgggggtg	gagaggaaag	tggcctcgct	11220
ccttgacaag	ggggcagaag	tcagcctctt	gtctgagggt	ctgataaaga	atattagggg	11280
ccggatccgc	agaattaggg	agaagagatc	agattccaag	tactgaagga	gaggaggcca	11340
gaggggttgt	cctgggggag	gtgtccggaa	ccccgggctt	ggagggagga	gcccggtatc	11400
ggatatgaag	ggaagggatc	agattcaggg	cctcgcagaa	gggcaaaagg	acggcccacg	11460
agccggcaga	gaaggatcca	gaccctcgta	ggccacggag	aaggagaaga	cgaccgcccc	11520
agcccgcggg	cggcgtgggc	cgtctcctca	cgcgtcgcct	gccacagcct	gcgtaaaacg	11580
cacaaccccc	accgcgcgg	cagtcagggg	ggcggagctt	gccgcccagc	caatggcgac	11640
gggcatgtg	ccattacgtc	acccacgcgc	agccaaccag	aggcggcacc	gagctgcacc	11700
tgtccgggct	ttaaaggggc	gcggggctag	ggaacgacgt	ttgccagccc	cgccactgaa	11760
acggagacgc	gtgtggggcca	catgggtaga	aaaacagcgt	ctgcctttat	ttaaagtccc	11820
tccccggccc	caggtcccg	ccttgggtccc	acccgcgcgc	ccggcgcggg	agtcctccgg	11880
ggatggaagt	agctatccag	ggctggctga	agggcccggg	acacttgctc	cgctctctct	11940
tggagccgccc	cggaacgcgg	ggcgcgaggg	tgtctcaggg	ccccaggaa	gtctggcagt	12000
tgggaggggca	gtgtgaagac	gggcacgggtg	cggaaaagg	cgggtacggc	gtccgggtgg	12060
agcagcctgt	cgaagcaggc	ccccacgtag	ctgccggggc	cccgccctg	caagaagtgc	12120
ggcagcacgc	agctgagcga	ggcgcggaag	gcgtcgtgcg	ggcgtgcgc	cccgggcccc	12180
gacaccccat	cctgtagcca	ctcgtgcac	agcgcacccg	caccgggaga	gaagagcaag	12240

accaccacgc	cgccctcctg	caggggtctgg	cgccgctgcg	cgtagaaacca	agccacgggc	12300
ccctgcgcgc	tcagttcacg	acggctccac	aggtctacgg	ccacgcgcag	cggcagctgg	12360
cacagggccg	acgccagggc	gcccaccagg	cgctcgaaac	ccgagtcac	ggctgagtag	12420
aggagcagag	ccgcgcggcc	cctggcggcc	gctgcgggag	aaaacagatg	gggaggggag	12480
aggtgagctg	gcacaggcct	ggctccccgg	ggcgggccct	ccgccagcgc	cttgctccca	12540
ctcaccctccc	gagcggacgt	cctgtttcaa	gagcctcagc	caccctgtta	ggggagaggg	12600
gcgaggcag	ccagttagct	cgccgcgcgc	tttcctcgg	agaactccca	cagccactct	12660
ggtcctcccc	caggggaatg	gggagccggg	aagcgtcac	ctttcgctg	atcctttttg	12720
agaaggagga	tgagggaaag	cgcagcggca	aagagtaggc	aggccagcca	cacgagggcc	12780
cagcgcttgt	ggatgtctgg	gagaccaga	gaagaagagt	tagaaactta	ccctccacag	12840
agaagaaaaa	ctgagactta	acagaaatga	attggcgcg	gtgcggtggc	tcatgccttt	12900
atataatccc	agcacttcgg	gaggccgagg	cgggcagatc	acgaggtcag	gacatcaaga	12960
ccatcctggc	taacacgggtg	aaaccccgtc	tctactaaaa	atacaaaaaa	ttagccgggc	13020
gtggtggcac	acgctgtaa	tcccagctac	tcgggaggct	gaggcaagag	aatcgcttga	13080
actcgggagg	cagaggttgc	agttagccga	gatcgcgcca	ttgcaactcca	gcctgggcga	13140
cagggtgaga	ctcctctcaa	aacaaaacaa	aacaaaacaa	aaaacgaaga	aatgatttgc	13200
ccagagtcca	cagcacagtg	tcagagccag	tggatgaata	tagctccatc	tggttagggg	13260
tctttgaata	agtaagtcca	ccctctgcct	cagttttctc	ctctgtaaa	ttgtacctat	13320
gtcatagggg	tggtgtgagg	actaaatata	ttaatacata	taaagcttaa	cacaatgtgt	13380
taatacatat	ttaacacaat	gccgagcatc	ttaagtgcga	aaatgtcagc	tggtttttctc	13440
ccctaagcta	gggttgctgg	gcccttgatc	ttgctgtcct	gggtgtctgc	aactacctgg	13500
tgctccctgcc	ctgtcttttt	tttttttttt	ttacctccaa	ttgatttggc	ttgaattgat	13560
tcatacagc	ctcagagatc	ttttaaaaat	ataaatttgg	gccaggtgcg	gtgactcacg	13620
actataatcc	cagcactttg	ggaggccgac	gcgggcggat	cacgaggtca	ggagtccaag	13680
accagcctgg	ccaagatggg	gaaaccccat	ctctactaaa	aatacaaaaa	ttagcagggc	13740
atggtggcag	gcgccctatta	atcccagcta	cccgggaggc	tgaggtagag	aattgcttga	13800
acccgggagg	cagaggttgc	agttagccga	gatcgcgcca	ttgcaactcca	gcctgggcaa	13860
cagagtgaaga	ctctgcctca	aaaataaata	aaaaaataag	tgtatatata	tatatatatg	13920
tgtgtgtgaa	atatataaaa	atttgatcgt	agctcctgct	gctctcaaca	taagatccaa	13980
atcccttaca	tgtctcctgc	atctttatct	catgacagaa	acctgcctgt	ccaagacctt	14040
gtactcttac	cccttctccc	tagctcagtc	ttcagagtgt	tgctggaacc	ttccccctga	14100
gcccctcacc	cctcacccca	cccaggtcag	gtccacattg	tatgcattta	cagcactgaa	14160
cacttggtgg	tgcttcagta	gctcccactt	taaagtgaag	tgactggctc	atgtcttgc	14220
agtcttctag	gggtggggcg	ggggcaagga	tttatatttt	tggtgttctc	gcgatccctg	14280
caagctctca	tcattttttg	agtgaatgaa	ggaatgaccc	tctgtttatc	tgatctcagg	14340
gaaggacaag	gccattgcat	gtgctgtgcc	caagagtggg	ccctgtcaag	atccccactc	14400
ctggtacaga	aaggaaaggc	agttcttaca	ataactcacat	ttgtccatgg	ggcaggccca	14460
tagcgtctcc	aagtcacgtg	cccatagctg	taagatataa	acagaaccaa	atccagggca	14520
ccagccaggt	gttccaatat	tcaccaagct	ctggtggcct	gatctccaaa	tttccagcat	14580
caactatgca	tatctcccgg	ctaagggtcc	tgcagctgct	ctgcctttgt	gctgtgccca	14640
ctgactaggg	tatgacttct	tccataccaa	atctggctta	taggaagaaa	ttcttcccgg	14700
aagctctccc	tggaaaccaa	aacttagcac	ctgtaggtgt	ggttatctgt	ttatgggtgt	14760
ctagccaaca	gtgtgtcctc	tggggatagg	aactgtgctt	cttctactct	taactttccc	14820
agggctgaac	ataaaataag	cctaaataga	cagtaggtga	gtgctagtgt	taggcctggt	14880
gcccctaggc	attgaggtgg	ggcccttctt	ccaccagctc	acctgcagac	actggcctga	14940
ctgcaggtct	tgtagtaagt	actctccaag	gcgagctgcc	ctctgccaa	ccaaaggatg	15000
ggggcactgt	tacctggagg	tagcaccctt	agggcagcac	ctaccaggct	acagctgggt	15060
agaatgaggt	agaggggact	gggagacttt	ggtgatgccg	ctgaatatgg	ccctggtctg	15120
agtcaccccc	catgttccca	gagaccggca	caggggtgat	ggagtgaata	tttgaggcca	15180
gatgtgagat	gcatttgagg	agatctgtgg	aggagggtcg	ccagtccta	accgtggagg	15240
ctttgctggg	tagtgaagta	cagccactgg	gttccaaggc	acagagggat	ctgtgtctct	15300
gggggcctcg	tgtctccaac	agtagcacat	cgtctttgag	aggccccagg	gagtctggaa	15360
ggggtgagag	gccactctga	ccaagaccca	tccttgctgg	gattggccac	ttgcctgcct	15420
cccatgccct	gaccttcacc	cctaggaggt	ggccctgccc	cagctgcccc	caggcccaac	15480
tcaccagccc	acaagcactc	ctgcagctgc	agcttctccg	agctgttcac	ctgctgggaa	15540
gagaccatgg	ttagggccac	taagaaaagc	aaaagccaaa	ggcagaaaga	ccagaatggg	15600
gcaggcaaca	gaaggcctgt	tgggttgagg	atctgcactc	aatctgacct	gaggcagatg	15660
tggattcaag	gctgggtgat	taggaatcac	tacatctttc	tctgccccag	ccttgtgaga	15720
tcactctgat	aaagcgtctt	ctgaccctaa	agctgttttt	atgtcttacg	gagcatggtt	15780
cccctctcat	ctaaccctct	caaagagatt	cctttctcac	atgaccaccc	tgctaaaaat	15840
tgaaccccca	gtccacacct	atccctttcc	catggtattt	gtatgcaatt	ttaagatact	15900

atatgattta	tttacaatgt	ctgttgccctg	cctttctcca	ttacaatata	agttctatga	15960
gggtagagat	gttagggctct	atcacaaagt	cctaaaacag	tgacttgtgc	tgctcaaaaa	16020
atcttgaatg	agtgaatttt	tttttttttt	gagacggagt	ttcactctgt	cgcccagctct	16080
cactctgtca	cccaggctgg	agtgcagtg	cgccctctca	gctcactgca	agctcagcct	16140
cccaggttca	cgccattctc	ctgccccagc	cttcctagta	gctgggacta	cagggtgcca	16200
ccaccacgac	cggtctaat	tttgtatttt	tagtagagat	ggggtttcac	catgttagcc	16260
aggatggctc	tgatgtcctg	acctcgtgat	ctgcccctct	cgccctccca	aagtgtctggg	16320
attacaggcg	tgagccaccg	cgccctggccg	gatgagtga	tgttcttata	atcacccctt	16380
gaaactgtag	agcaacccat	tctacaggta	tggaataga	ataaggatag	caataataaa	16440
agtggctaca	tttatggagc	atcttagctg	taccgattcc	taaggggaag	cacttctctt	16500
atctcattgt	cacaaccact	ccatgaggta	gttactgtat	tatcatctgc	attaaacaga	16560
tgaggaaact	gacgttcaga	gaggtgaagt	gagttgcca	gggtcccgcg	cactactaaa	16620
gtaggcagtg	gaactcccat	agaggaagct	ggcaaccact	atgcttttagc	ggcccaagaa	16680
ctaagacccc	cttggtctggg	gggtctgccc	aggtccagcc	tccagcccag	cactatgcac	16740
ccctttctga	cctgaacaca	gaggttaggg	tggtctttca	gcaatgggaa	ctcgagaacc	16800
ttctgtggaa	agagaggaat	gggtggggtc	acaaaagggg	acccccggtt	ccccactctc	16860
ccctcaccac	gggaggtgcc	ctctgcttca	cttactgcca	cagtgcagtt	ctcccaggaa	16920
agcgggtggga	ccagtggctg	gcagggggtcc	ccaccggag	cccgccagca	cagtgcgct	16980
tctgcgggca	gcgagcacgg	tgctgcccagc	agccagctct	gcagggtcag	cagtcgcagt	17040
cgggcggtct	gccagaggtt	ctggtgtgctg	cggggggtctg	caaggaaagg	gcacagtcac	17100
cgagggccag	gtacccatcg	ctcgcaacac	cccaacccca	gccccaggcc	ggtcgggtca	17160
ccctccctga	aggggcagat	gttcgtccta	acggagtcag	gttccagagg	ccacacctgg	17220
aaaggaaatg	ggggtctgct	caggtccctc	ccatgggcat	gtgcctggcc	ctctgtctga	17280
cagtggggat	gcactcattc	agcaggtatt	tcacaaacac	ttgctgggtc	ttctctgctt	17340
ttacaaaacc	tgagggtgct	cacatctatt	cttccagcaa	acataatgct	gggcactggc	17400
aacatcttca	ttaacaaact	tttttttttt	tttgagatag	agtctcgctc	tgctgcccag	17460
gctggagtgc	agtgtgcaa	tcttggtcga	ctacaacctc	cacctcccag	gttcaagcga	17520
ttctcccatc	tcagtctcct	gaggagctgc	gattacagga	acatgccaca	acggccggct	17580
aactggttaa	tttttgtatt	tttagtagag	atgggggttc	accacattga	tcaggctggg	17640
ctcgaactcc	tgacctcaag	tgatccacc	gtctcagcct	cccaaagtgt	tggtattaca	17700
agcgtgagcc	accgcgcctg	gccatttcaa	cagactttta	atgagtgcct	accattgtgt	17760
cttagcagta	tggaagcac	aagagacctt	ggataattaa	atttttatta	tttttttatt	17820
ttttgagatg	gaatctcact	ctgttgccca	ggctggagtg	cagtgggtgtg	atctcagctc	17880
accacaacct	ccgcctcctg	ggttcaagt	attctcctgc	ctcagcttcc	caagtagcag	17940
ggactacagg	cgcacatcac	catgcctggc	taatttttgt	acttttagta	gagactgggt	18000
ttcactatgt	tagccaggct	ggtctcaaac	tcctgacctc	gtgatccacc	caccttggtc	18060
tcccaaagt	ctgggattac	aggtgtgagc	cactgtgcct	gggtgataat	taattttaat	18120
tcattccaca	atcactttgt	aagcacctgc	tatgtgttgg	ggaatgtgct	aagttcttaag	18180
gacacattca	tttattcttt	caacagacat	ttcaagagt	cctattatgt	gcatagctct	18240
atgctaagca	ctagaggtaa	tacattaatt	tatccatcaa	gccttttagt	aggaacaccg	18300
actatgtggc	aggcactgtg	tttggaatg	aagccattta	aatcacagca	tacatctcat	18360
gaacatctgc	tgtgtcctat	ggctgtgtta	ggcagtaaca	tttattcact	cattcaacag	18420
tgaggacctc	atactgttac	cttggtttaa	aacaaaacaa	ggctgggcgc	ggtgggtcac	18480
ccctgtaatc	ccagcacttt	gggaggccaa	ggtgggcgga	tcacgaggtc	aagagatcga	18540
gaccatctgg	ccaacatgct	gaaacccctg	ctctactgaa	aatacaaaaa	ttagccgggc	18600
atggtggcat	gcacttgtag	tcccagctac	ttgggaggct	gaggcagaag	aattgtctga	18660
atccaggagg	cagagattgc	agtgcgcca	gatcacgcca	ctgtactcca	gcctgccaat	18720
agagcgagac	tctgtctcaa	aaaagacaaa	aaaacaaaaa	aaaaacaaaa	acacaaaaaa	18780
acaaaaaaca	agtaggcgct	atgtgcaagg	ctcttgcaaa	gctattacat	ttgaattaga	18840
tatgatttgc	tgtccttcaa	ggaaatcaca	aactcacact	tgtagtaagg	ataaaatatt	18900
tatataaaatt	agtaaaaaac	tcatttcatt	cataatattt	attgagcatc	tgttgtgtac	18960
aagaagaaat	tagatgcccc	aataagaaa	taagtattg	agctgggtgt	ggtggcccat	19020
cgccacaaaa	cattaaaaaa	tgaaaacagg	ctgggcacag	tggtctcacg	ctgtaatccc	19080
agcacttttg	gcggccgagg	cgggtggatc	acgaggtcag	gaatttgga	ccagcctgac	19140
caacatgggtg	aaacctgtc	tctactaaaa	atacaaaaat	tagctgggca	tggtgggtgtg	19200
tgctgttaat	ctcagctact	tggtgggctg	aggcaggaga	atggcttgaa	cctgggaggc	19260
ggaagttgca	gtgagccgag	atcacgccac	cctgggcaaa	agagtgaac	agagtgaac	19320
tccattaaaa	aaaaaaaaaa	aaaaaaagga	aacaattagc	caggcatggt	ggcgcatgcc	19380
tgagtcacca	gctgcagagg	ctgaggcagg	aggatccctt	gaacctggga	gcttggggct	19440
gcaatgagac	gtgttcattg	cactgcactc	taccatgggt	gacagagcaa	aatgtgtct	19500
ctaaaaaaaa	aaaaaaaaatt	taagaaaata	aaagaaatga	agtgataaat	ggacaaggaa	19560

```

agatagaagt gcaaggggat ttggagctag gagaggccgg gtggttgggg aaaagctttg 19620
ggaaggaggt gagggcattt gaggtaatgg gaaccacctg agaaaaggca gggagctagc 19680
tgtatcttgg taagtagctc cactggatgt aacaatgttc tcatgaaggg gaatcatggg 19740
gaaaatagag tgaaaaggca ccgttggggg cagaatatgg gcccagaatg ccaggaaagt 19800
gatgggaagg gaggggagct tggagggtgt gaaacagtct agaaaacaga tgatagagcc 19860
ctaagctgga ctgagatgga gaggaggggg aaagaaaatg agagacatta atgtcagagg 19920
taagatggat gagacctgat gaccaattaa atgtgcaatc agcggctggg cacagtgggt 19980
catgcctgta atcccagcac tttgggagga cgaggcttgt ggatcataag gtcaggagat 20040
cgagaccatc ctggctaaca cggtgaaacc ctgtctttac tgaaaataca aaaaattagc 20100
tgggcgtggg tgcaggcacc tgtagtccca gctactcagg aggctgaggc aggagaatgg 20160
cgtgaaccca ggagaagcag cttgcagtga gccgagatca cgccacgggt ctccagcctg 20220
ggcgacagag aaagactctg tcttaaaaaa aaaaaaaa aaagtgcagt cagggcaagc 20280
cacagtggct catgcttata atcccagcac ttgggtgggag gctgaggtgg gaggatagca 20340
taagcccagg aattcagaac agcctgggta acatagcaag acccctctc tacacaaac 20400
aaaaaaaaac tagctgagta tggtagtgct caccagtagt tccagctact tgggaggctg 20460
agacaggagg atcacttgag cccatggggc tgaggctgca gtgtgccatg attgtgccac 20520
tgactccag cctgggcaac agagttagac cttgtctaaa aaaataaata aatgtacaga 20580
ggaagaggaa agagccagca tatttaagcc tgggtgtggc acacattctt ataacagccc 20640
catgaggctg ttactattat tattccatt ttacagatga gaaacaggct cacagaggtg 20700
aagtgacttg cccaagggtta cacagctagc aaatggcaag agccaagatt caaaccagtc 20760
caagttcgta gcacatgctc tgcccggcag gggaacacaa agacagaact ggaggagtag 20820
ggaagggttt caaggagaag gtgacatttg aatggggcca tgaagaataa gcaggagttc 20880
tgtggaggat caggggagagc attcagggaa tgtaatagac agaaggcata ggacagcaag 20940
ggtcaaggga gggccagcca ccccgaggag ccacagctct cacctcaatg aagggtttga 21000
agaatggtga gaccaggaag gcagggatca cccccatcat catcttccca ctctcttct 21060
ggcaccagc tagactctgc tctacctga atacagaggc aggggaaccag gtctgtgtgg 21120
ttcaaggtaa tgatctgcgg tccagtctgt ggaacaaata aaggaaggag gttggagaag 21180
ataaggagga agaggaggag gccaaagtca aggaaccag gaaggcagaa gttccccac 21240
caattttccc ttgcttgggg tgagtcctct tcaaggatcc tctctgatat ggcactgcgt 21300
cctttgcaca ggcacgggcc tacagtggga atggacttgg gaagggggag gcctcaccag 21360
gtttttgtgc caccggggtt ttggggggcc ctggacctga ttccagtaca gggagaggcc 21420
gaagtgtctg tcctcagaga cattcagaac cagatgcacg ttgtcaccat ctgctgacac 21480
gttgagccag ggcagggctg g 21501

```

<210> 642

<211> 308

<212> DNA

<213> Homo sapiens

<400> 642

```

tttttttttt cctttttttt tttttgagat ggagtctggc tctgtcgccc aggctggagt 60
gcagtgggtg gatctcggct cactgcaagc tctgcctcct ggggttcaag ccattctcct 120
gcctcaggct cccgagtagc tgggactaca ggcgcctgcc accatgccca gctgattttt 180
ttgtattttt tgtagagatg gggtttcacc gtgttagcca ggatgggtct gatctcctga 240
cctcgtgacg cgccagcctc ggcctcccaa agtgctggga ttacaggcgt gagccaccgc 300
gcccggcc 308

```

<210> 643

<211> 1024

<212> DNA

<213> Homo sapiens

<400> 643

```

gcgccgctg caggtcgctc agcgacgtgc gcgtgcgagg gccggtccca cagcacgtag 60
tggaagcacc cgacggggca gccgtgcgg cttctggcag ctccctcgac agcttctcca 120
ggggttctact caagatcagt tggaaacctt ggcgcacagg gctgtcatca gtggacagtc 180
tgcccctaga tgagtggccc agcacggtag agctactgcc tgccccgacc ccagccctg 240
attctaccgc cgctcggcag ggggacggcc agggagaggt ccagccgcgc ggcaagcctg 300
gggaatcccg cagcgctcc agtgatacca tctagctttg aagagcgggtc ctgacgcagg 360
gccaggaccc tgcccgatgc ccacatggca tggcctactg ggacagttga gcctttaaaa 420
aatgggcatc ctggccaggc gcggtggctc acgccaggaa tcccagcact ttgggaggcc 480

```

gagggtgggtg	gaacacgagg	tcaggagttc	gagatcagcc	tcctgggtctc	gaacatagcg	540
aaaccctcgt	ctctactaaa	aatacaaaaa	aattagccag	gtggcacacg	cctgtagtcc	600
cagctactcg	ggaggctgag	gcggggagaat	tgcttgaaca	gggaggcaga	ggttgacgtg	660
agccgagacc	acgccattgc	actccagcct	gggtgacaag	agtgaactc	cgtctcaaaa	720
aaaaaaaaaa	aaaaaaaaaa	aaaaggcatc	cccaggcctc	tctacctgac	ggcaaccccc	780
gggggacagc	cagggttgaa	ctcaccacc	ccccatgccg	ttttttgctt	ttaatatttc	840
tatttttttt	tcagccggca	ttttgcacag	aggccgtgtc	ttatgcggaa	tacagggtgg	900
gtgtgcatgg	attcggggcat	gaagaacagg	gagcaggtgc	cccagactcc	ccaacgtgga	960
gtgatgagcc	tcgcttgtct	agattgtcct	ctttgtgcc	aagaaataaa	cccttaggac	1020
ttgg						1024

<210> 644

<211> 7365

<212> DNA

<213> Homo sapiens

<400> 644

gaaagcgtgt	tggccaaatc	tgaatgatga	aagccaatta	caaactagaa	aatgaaaaca	60
gaccccgat	gcaaggagat	gagacagtta	aatttacttc	ctcttttcta	atctgagagg	120
tttcatgttg	aagaaaatca	gtgttgggtg	tgcaggagac	ctaaacacag	tcaccatgaa	180
gctgggctgt	gtcctcatgg	cctggggcct	ctacctttcc	cttgggtgtg	tctgggtggc	240
ccagatgcta	ctgggttaagt	aaaatatttg	aatattgggt	tgggaatgga	gctttgctta	300
ccttgggaga	aaggaccaga	aggaaagaaa	catggactaa	ttctggccct	caaagaagc	360
agtattcagg	tggaaataaga	agggtaggta	taagaaagtt	tgggtgtacag	gattgaatta	420
ctttctgaat	ataaaaatct	tccatcctga	aagtcctcct	tgatcatgat	atcctctcta	480
gctctaactc	caactctttt	ctttcacttg	tgagacaagt	tttcttaaaa	gaatagtgtg	540
cacttgctat	ctccacttcc	tcacttctca	cacgtctctc	aatgcttgca	gcctggcttc	600
cactggaatt	ggtttttgtc	agggcacaa	gatctctata	ttgactgggt	tatggcatgc	660
ttttcagttc	atatacctgt	ggactttctc	gctgcactgg	gctctgttga	tcacttactc	720
ctttctgcat	tctctactac	cctggcttcc	atggcaccat	tttctccttg	tactacatgg	780
acttctcttg	atcccttaat	agcttctctt	ctcttccctt	taaacactag	tgttctctat	840
agttatagcc	ttgcctctgt	actcctcttt	ctttacacaa	tctccttcat	gagcttattt	900
gtctgtttta	tttttgccac	tataactctg	tatttaagag	tcccaaatca	tatccccaac	960
cctaaccatg	cttttgagct	tcacattcaa	atatcaagct	tcataccaga	catatctacc	1020
tacatatctc	acaagtgtct	ctgcaccatg	tgactagagt	tgaacttatc	tgctcctttt	1080
gcccctgcct	catctaattc	attttccact	ttctgatctc	agctaattgac	accagcatct	1140
acccttacaa	ggccataaac	ctcagaaaca	accagactc	ttccttcttt	ttcattctct	1200
aaatctgata	aatcattagg	tttggccaat	tttactctct	aaattgttca	tagaagcagt	1260
cccttgcttg	gatcatcact	aatgtcttag	gacaagccct	catcctctat	gacttgggct	1320
attccagtaa	attcctaact	aatctcctcg	tccaaacctt	gtgttcttga	aatgaattct	1380
gtaccctgca	gacagagtaa	tttctaaaac	tcaagtttac	cagcccaaat	tctttatcat	1440
ggcacaaaag	gccaagcagc	ctctactttt	accctctcag	ccttgtaact	tatgctctaa	1500
taaatctcaa	tcagttcata	tttacatact	cacacaccag	actcttgcc	gtctctaagg	1560
ctttgcttat	accactatct	ctacctgaaa	tgagtctctt	ccatggcacc	ctactctcct	1620
tctccttgca	aatgtgtagg	tacccttaaa	gactcagctt	aaatgggtatc	ttttccagggt	1680
agcttttctt	gaatgcttct	ttctgctcca	atggctgctt	gcgatacatt	tttcttatta	1740
taatattttc	ctacttatgc	tgaaataata	tttcatctta	cctgtgtctt	ccactaaatt	1800
gagagctatt	tgtgggtagt	gacaaatgtt	ttttgttttt	gtcttgtgat	aagaactgca	1860
gacttggaat	cagatactcc	tgtttcaagc	cctcttctta	tttaccagct	ctatgtcact	1920
ttagaaaatc	actttttcta	tttctgggtc	agttttctca	tttgtagaat	gaaaataata	1980
atacctacca	cctaagggtt	attgagttag	ttcccagtaa	cccaacaaga	ttttatttta	2040
ttttatttta	tgttttgaga	caggtgtctg	ctctgccacc	caggctggag	tgcagtgggtg	2100
caatcactgc	tcactgcaac	cttgacctct	tgggttaag	caatcgctct	atctcagcct	2160
cccaagttag	tgggaccaca	ggcaagtgcc	accaggcctg	gccaaatttt	taaaaaatta	2220
tttggttgaga	caggtgtctc	ctatgttccc	caggctgggtc	tcaaaactct	gggctcaagg	2280
gatcctccca	cctcaacctc	ccaaagtgtc	gtgattataa	gcatgagcca	ccacgcctgg	2340
ataagatttt	attttttaaa	agaaaaaatg	gagaggaggc	agagcacaga	tgagtgcacag	2400
tggagggaact	gaaaagaggt	agcattacag	tgaaggaggc	ggagaaagga	tggaaagaaa	2460
acacctggta	ctgatgtgat	gagaattagg	aagtaggagg	gggtcttgggt	aagggacatg	2520
acaaaatcaa	agaagaacgc	tgggtctattg	ggagtggag	agaataaagg	caagtggggc	2580
acgaaatgac	agtcagatgg	agtgaagaag	tatgcacatg	tgaatggcca	tgaggctgga	2640

ggaggggggag	aatagtttagg	gagataaaga	gcagtcaccag	agaaggggaga	aatgtcactt	2700
cccttgcccta	ggtctacccat	gaaggtaaga	gataggttga	ggagatgtgg	tgagaaatgg	2760
ataattctaa	atttcaatct	ggagcaaaga	attgttccac	agttactaat	atggactggg	2820
aggaggggaa	aaaagacaga	gaaagctctg	tgccactgcc	agggaaaatt	caagtggcag	2880
aggacattaa	agtaaagatg	gctgaaaagt	gaagacctgc	aagggggagg	aagaaaggag	2940
gagagacact	gctgggtact	gaaagctctt	tgtagataa	catattcaag	gctgaggagc	3000
caagtgaagt	ttgggaaaat	cagaatatga	aagaaagtcc	ccgaggaagg	tctgaggact	3060
gaagtagacc	atatttgcac	agtgaagtaa	aaagaacatt	gatttttgac	tcagacacac	3120
ctgcctttcc	cgatccattg	cttagtctct	ttttaagctt	tggttatgtt	aatttggttt	3180
tctaagtgtg	tttctttaag	attataaaat	gaggataaag	tcacctacct	ggaaagtttg	3240
tgaggatgaa	cttagatact	gcacacaagt	gctagcaggg	tctggcacc	agtgaacatt	3300
agaatctgat	gtctcccttt	cattcctgtc	ctatgcctcc	ctgcttcgag	ttaccattgt	3360
ctttgtctct	ggtttcccg	accagcagct	ggatgtcatg	ccggtgagtt	tcaccattct	3420
ttcattctct	cccctccctc	ttctccaaac	cacagtgcac	ttgctgagag	cacctggacg	3480
ccagtgaatc	aagggtcaaaa	ctatccccct	gagacactct	caggggtctt	tcggaaaaaa	3540
aaaaagggtt	tgatgtctta	ctagtctcat	tctaaaaagg	atgattatcc	tgaggatagg	3600
aggaaccctg	tcctctttct	ccaagttgca	tcactatttt	ctggttctcc	ctgggcatg	3660
ccctcttcag	ctgccagttt	tgagacgtcg	cagtgtgagg	gacctgtctg	cactgaggag	3720
agcagctgcc	acacggagga	tgacttgact	gatgcaaggg	aagctggctt	ccagggtcaag	3780
gcctacactt	tcagtgaacc	cttccacctg	attgtgtcct	atgggtgaggt	cctgggaagg	3840
cctgagcag	gccccaaacc	ccttctttca	gcctcagagc	ccaccagga	aagtgtccct	3900
aggaaattgg	ctatgggatg	aggtaacttc	ttcccagctc	tcagcccaca	gcaaccaggg	3960
tgctctaagt	cctagggcct	agggaaagttg	tcccatctc	ccaaccaggg	gtgagagttt	4020
acctgggacc	cttctcttag	tttaggggag	tgagcatgct	tggggggtgg	ccccaaggga	4080
ggcctctgggt	gacactcagc	tctttctctg	gaccatagac	tggtctgatc	tccaaggctc	4140
agccaagcca	gtttttgaag	gggacctgct	ggttctgcgc	tgccaggcct	ggcaagactg	4200
gccactgact	caggtgacct	tctaccgaga	tggtctagct	ctgggtcccc	ccgggcctaa	4260
cagggaattc	tccatcaccc	tgttacaaaa	ggcagacagc	gggcactacc	actgcagtgg	4320
catcttccag	agccctgggtc	ctgggatccc	agaaacagca	tctgttgttg	ctatcacagt	4380
ccaaggtgag	agctagaagc	agcattgtca	tggcagggga	gggtaaggag	agacagggag	4440
ccaaatltgt	cttctcttag	cctggaggta	gcaagatcat	caacagacta	tggagcaggt	4500
tgctggcaaa	tgcccaagtt	gggcttcgaa	agggacgaga	cctcagcctt	ttgaagtcac	4560
ccagccccac	tcagagtcca	gcatagtctc	taccaccag	atctatgctt	cctagtgtct	4620
actgattggg	tgtctggaca	actatcagat	ttgcccatct	gtggatcttt	cctagtctctg	4680
tctacttaca	gaaagaactt	gacagattca	aatggaatct	aagagagccc	attcctgctg	4740
gaaacagggg	aaaggaagta	tgactcccca	agtctcttca	cctgcatgtg	tctacctgta	4800
tataagatgg	cttgactctt	cttctctgce	tatctttttc	ccagaactgt	ttccagcgcc	4860
aattctcaga	gctgtacctt	cagctgaacc	ccaagcagga	agccccatga	ccctgagttg	4920
tcagacaaag	ttgcccctgc	agaggtcagc	tgccgcgctc	ctcttctcct	tctacaagga	4980
tggaaggata	gtgcaaagca	gggggctctc	ctcagaattc	cagatcccca	cagcttcaga	5040
agatcactcc	gggtcatact	ggtgtgaggc	agccactgag	gacaaccaag	tttggaacaa	5100
gagccccag	ctagagatca	gagtgcaggg	tgagttcgca	tcagagtgc	ggttgtctgt	5160
ttggcatgcg	tgtgagtga	aaggagggat	aggataaatt	gacctgtgag	ctgggggtta	5220
gtgtgagcag	gttaagaagg	gacacagagg	gggcaggaac	aatgggcccag	aatccctgat	5280
gatgagagac	agcacaaata	gagaacttct	ccctcagact	gtggtgcaca	cctcaccaga	5340
ccaagagctg	agccagctcc	acacctgctg	ccccacaagc	cttagcatcc	cccccaacat	5400
gctctctggg	catttatagg	aatttaatat	ctggaatgaa	gatgggatag	tctgaagtct	5460
atgttcaatt	ctgggagcca	ctgttaagag	gctgcacttg	acctgaaaca	ctcccagaag	5520
agggtgccag	ggtgataagg	gggcttaag	tcagtgcata	tgaaaaataa	tggaaggggc	5580
tgagatgct	atcctgaaga	ggaggtgact	cagaggccag	cagaggtgtc	ctcaaaaagc	5640
tgaaggctgg	cattagcaca	aggaattgga	ctaattgtct	atataataaa	gaggctgacc	5700
tagaaccagt	taccacattc	atgcttcagg	gaattagatt	cagccttgat	agagaaagaa	5760
ctggctaata	gttatagctg	tccagtgggtg	aagcctcact	gctgaagaat	ttcaaacaga	5820
agtggccaag	cttcagatta	aaatttggac	caggagggac	actagagtcc	tcaagtccct	5880
gctgccattg	ggccccacag	ccactttcag	agaacaagaa	agattggcca	gggatgggag	5940
ggaagggcca	gagtcagact	tcactettgt	atgtgcctcc	tgccccataa	ttcaggtgct	6000
tccagctctg	ctgcacctcc	cacattgaat	ccagctcctc	agaaatcagc	tgctccagga	6060
actgctcctg	aggaggcccc	tgggcctctg	cctccgcgcg	caacccccatc	ttctgaggat	6120
ccaggctttt	cttctctctt	ggggatgcc	gatcctcact	tgtatcacca	gatgggcctt	6180
cttctcaaac	acatgcagga	tgtgagagtc	ctcctcggtc	acctgctcat	ggagttgagg	6240
gaattatctg	gccaccggaa	gcctgggacc	acaaaggcta	ctgctgaata	gaagtaaaca	6300

gttcatccat	gatctcactt	aaccacccca	ataaatctga	ttctttat	tctcttctg	6360
tcctgcacat	atgcataagt	actttttaca	gttgtcccag	tgttttgtta	gaataatgta	6420
gttaggtgag	tgtaaaataa	tttatataaa	gtgagaatta	gagtttagct	ataattgtgt	6480
attctctctt	aacacaacag	aattctgctg	tctagatcag	gaatttctat	ctgttatatc	6540
gaccagaatg	ttgtgattta	aagagaacta	atggaagtgg	attgaatata	gcagtctcaa	6600
ctggggggcaa	ttttgcccc	cagaggacat	tgggcaatgt	ttggagacat	tttggtcatt	6660
atacttgggg	ggttggggga	tgggtgggatg	tgtgtgctac	tggcatccag	taaatagaag	6720
ccaggggtgc	cgctaaacat	cctataatgc	acagggcagt	acccacaca	gaaaaataat	6780
ctggcccaaa	atgtcagttg	tactgagttt	gagaaacccc	agcctaata	aaccctaggt	6840
gttgggctct	ggaatgggac	tttgtccctt	ctaattatta	tctctttcca	gcctcattca	6900
gctattctta	ctgacatacc	agtcttttag	tgggtgctatg	gtctgttctt	tagttctagt	6960
ttgtatcccc	tcaaaagcca	ttatgttgaa	atcctaata	ccaaggtgat	ggcattaaga	7020
agtgggcctt	tgggaagtga	ttagatcagg	agtgcagagc	cctcatgatt	aggattagt	7080
cccttattta	aaaaggcccc	agagagctaa	ctcacccttc	caccatatga	ggacgtggca	7140
agaagatgac	atgtatgaga	acaaaaaac	agctgtcgcc	aaacaccgac	tctgtcgttg	7200
ccttgatctt	gaacttccag	cctccagaac	tatgagaaat	aaaattctgt	tgtttgaag	7260
ctattcagtt	tgtgtatttt	gttatagtag	cccaaatgga	ctaggcagtt	ggcctctgcc	7320
acatgactga	gtttatgata	tgttaaaaat	actcataaaa	cagtg		7365

<210> 645

<211> 2593

<212> DNA

<213> Homo sapiens

<400> 645

tgggcacctg	taatcccagc	tagttgggag	gctgaggcag	gagaatgaat	cgtttgaacc	60
caggaggtgg	agggtgcagt	gagctgagac	cgcaccattg	cactctagcc	tgggcaacaa	120
gagcaaaact	ccgtctcaaa	ataaatacat	acatacatat	atgcatacat	acatacatat	180
atacggggat	taaaatagtc	tagtagtgac	acctgaacag	agagattgat	ccaagaaatg	240
aaacagaaat	tccggaagtt	gacctgaata	cacacacaca	cacacacaca	cacacacaca	300
cacacagcaa	ggcgtgaaag	actccatgac	cctcaaggta	taagatgcat	tttttttttt	360
tttttgagac	aggggtctcac	tctgtcaccc	agactgggtg	cagtgggtga	ctatcccagc	420
tcagctctac	cctccatccc	cccaacctcc	cccaaccacc	ctgagctcaa	gcaattctca	480
tgcctcaacc	ctcagcctca	tgagtaactg	ggactacagg	cgtgcaccac	catgcgcagc	540
taattttttg	tattttttagt	agagatgggt	ctaaccatat	tgcccaggct	ggtctcgaa	600
tcttgagctc	aagcgatcct	cttgcttcag	cctcccaaag	tgctggcatt	acagctgtga	660
gccaccgcac	ctggccgcac	tcttctaaat	cacagtacat	ctggctccca	gtgccaggc	720
tctcaggga	gaagggtccag	tgtgatcact	ttgtctggcc	tctctccctt	cctgagcttg	780
tgccaggggc	ccagggtctga	cctggagaag	gaaaatggca	gagggtgaag	atgggggtgc	840
tggtttgggg	accatcctgg	cccccttgt	cactgttgac	atctcttctg	cacagtggca	900
ttgctggggag	gtgcttactg	tgcttattca	aggggctggc	agccgcagcc	tcactgcaga	960
tcagggactt	ggcttccccag	ttgaccacag	gtccaagaac	ctgcagggtc	cagcctcccc	1020
cccatcccca	gtcttcccca	ccctggcccc	gccctccagg	tgcagaaaca	tgcaggcccc	1080
tctccaggac	tgtgggagga	gcgtgtccct	cagactggcc	tgtgtcctgg	ctcctcttac	1140
cacctcttcc	acaggttgct	acctgcagct	gccccaggat	aaaggcaagg	ccagagagga	1200
ctcctgaact	cctgtgtgcc	tggggtggca	ggggcaaaca	tagccaactg	gtggcctgag	1260
cggggccatg	gtgaggacac	ccttgggtggc	ttgtcccaca	tcaagctggg	agggtgacact	1320
gaggatgcat	tagtctgcag	cgtatgataa	aaacggcatt	tcaggccagg	cgcgggtggct	1380
catgcctgtc	accccagcac	cttggggaggc	caagggtgagc	agatcatatg	agggtcaggac	1440
tttgagacca	gcctggccaa	catggtgaaa	actcatctct	actaaaaaaa	caaaaattat	1500
gtgggttggg	gggtgtgcgc	tgtaatccca	gctacttggg	aggctgaggc	aggagaatca	1560
cttaaacctg	ggaggcagag	gctgcaacga	gccgaaattg	caccactgca	ctccaggctg	1620
actccgtctc	aaaaaaaaaa	aaaaaaaaaa	aggcatttca	gttcaaatag	ggaaaggata	1680
catctttctt	tcttttctct	ttctttcttt	ctttctttct	ttctttctct	ttctttcttt	1740
ctttctttct	ttctttcttt	ttctttctct	ccttctcttc	ttctttctct	tctctctctc	1800
ttctctctgt	tctctctttc	tttttgagat	ggagtttcac	tctcgctgcc	caggctggag	1860
tacaatggcg	tgtatctggc	ttattattat	gttccatgtt	ggtcaggctg	gtcttgaaat	1920
cccaacctca	gggtgatccgc	ctgcgttggc	ctcccaaaag	gctgggtgtga	gccactgcac	1980
ccggccttagg	atgcattttt	caatatttta	gtgtttgaat	aacgggctaa	cttgagaaaa	2040
aaataatttg	aatcacacat	cacaccaaaa	ataaattcta	ggtggatttt	aacactttca	2100
aaaattatta	ttattattag	tttagagaca	gggtctcact	ccgtcgctca	ggctggagtg	2160

gagtggatg	atcatgggtc	actgcaacct	taaactcctg	gcctcatatg	atcctccagc	2220
ctcagcctct	caaaggactg	gaactacaaa	catgcaccac	cacgcccagc	ctaggtgggt	2280
ttttaaaatc	cattcaaggg	cggtgacagt	ggctcacacc	tgtaatccca	gcattttggg	2340
aagccaaggt	gggaggatca	cttgagccca	ggagttcgag	accggcctgg	gcaacatagt	2400
gagactacat	ctctacaaaa	aatttaaaaa	tgagccaggc	atgggtgggtgc	acacctgtag	2460
tctctgctat	tcaggaggct	gaggcgggat	cattgtttga	gcccaggaga	cagattgcag	2520
tgagctatga	tggcaccact	gcatggcagc	ctgggtgaca	aaggagagatt	cagtctcaaa	2580
aaaaaaaaaa	aaa					2593

<210> 646

<211> 149

<212> DNA

<213> Homo sapiens

<400> 646

ggctgggtgc	agtggctcac	acctgtaatc	ccagcacttt	gggaggccga	gacagggtga	60
tcacctgaag	tcaggagtgt	gagaccagcc	tggccaacat	ggtgaaaccc	tgtctctact	120
aaaaatacaa	aagttagcca	ggcgtgggtg				149

<210> 647

<211> 8996

<212> DNA

<213> Homo sapiens

<400> 647

gacgggggtt	ggccatgttg	gccaggctgg	tctcgaactg	ctgacctcag	gtgatccgcc	60
tgctctggcc	tcccaaagtg	ctgggattac	agggctattc	cactgtgccc	agcctgagtt	120
tctgtttaga	aacaacagtc	tatgatagta	taatcctctc	ttttttgtac	acagagtaaa	180
gaggacaaat	aggtgaaaga	ataaatgaaa	ggctggaatc	ccacttcccc	cgctgtccca	240
gggcattgga	tattgacgga	taggaggcag	caaaccactc	acagagccag	gaagaaatga	300
agggcgttgg	attgccagga	ggggaagccg	gctcggctga	aatacgctat	gaccatagca	360
aggagatact	gatggagaga	aaggaacaca	gagagggaga	ggtcacatct	tgggaagagg	420
agattgtgga	gagggggaat	gagggctctg	ggaggggctg	cccatcagag	aagggacctc	480
agtgtttggg	tgactgtact	cattttgaaa	ttgcgggatg	gaggggtatt	cgaaggctcg	540
atgcaaatcc	gagaagccag	aggaaggggt	ttgggtgatg	ctcccaggat	ggtgggctcc	600
gatgggatct	ttggaggggg	tgtgtctagg	ttggctgggt	tcaggagggt	cttttgtgtg	660
ccaggcagag	aactgtcccc	aagagctgag	agtagagggg	ccaggagctt	cagggctcg	720
gcagactgt	ggcccagagc	tcagatccca	aaggacccat	aggagaggca	ggggccactc	780
attcactctg	caagagacca	gcagaatcct	gagggagatg	ctgacaaatc	ataaaaagac	840
caagaatagc	cgggagtggc	ggctcaagcc	tgtgatccca	gtactttttg	agaggtggag	900
acaggaggat	catgtgagcc	caacagttcg	agaacaacct	gggcaacata	gtgagaccct	960
gtttccacaa	acatttcaaa	aatttagttga	gcatgggtgc	atgtgcctag	tcccagctcc	1020
tcaggaggct	gaggaaagaa	gattgtctga	gcccagggaat	tagaggctgc	aatgagctat	1080
gatcatgcca	ctgcactcca	tcttggggag	cagagctaga	ttctgtctca	caaaaaaaaaa	1140
atttgtgggt	gccaagactc	aagaccatgg	gagctggctg	ggcacagtgg	ctgacgtcta	1200
taatctcagc	actttgggag	gccaagggtg	gtggattgcc	tgaggctcag	tgttcaggac	1260
caacctggcc	aacatggcaa	aaccccgttt	ctactaaaaa	cacaaaaatt	agccaggcgt	1320
ggtgggttcat	gtctgtaatc	ccagctgctt	ggaggctgag	gcaggagaat	cgcttgaacc	1380
caggaggcat	cggctgcagt	gagtgaagat	cgagacactg	ccctccagcc	tgggcaacag	1440
agcaagactc	tgtctcacac	acacaaaaaa	aaaaaaaaaa	aaaagactgt	aggagcatct	1500
ggtgggaggt	ggtggaggga	gaactgtggg	tttggaagct	gcgccctccc	cccagccatg	1560
cgttggaaac	ggaacagtta	catggagaac	aaccttacct	tgtccgacac	cctcagatct	1620
ttgtcccagg	ccaggaatct	tttaatgaca	ggatcctctg	tgattagaga	gcagatgtca	1680
gtgtgagaag	caggacaggg	ttlccgtggg	agcagcaggg	cagcgaggag	aagtgtgcct	1740
cccgggggga	agtctcagga	ttgtggccgc	gggtgagggt	gatgggagag	gggagaatga	1800
ctttcactgg	gcaagggaga	gaggtcctg	ctctgagact	cccctgagaa	gaggccgaag	1860
gagggcctgg	gtgtgagaat	ctacaggatg	tagagctggg	aatcagccag	gacccctcc	1920
agcagacacg	gagggaccac	tgcagagtca	taaaggaatt	cccatcattt	cctcatgaga	1980
cagtcacaca	tcagggtgtg	accatggcct	tggtatcccc	cactatggat	ggagacactt	2040
aggttttagaa	aagtcagtaa	gagacattaa	gtttcagagg	gcacagctga	aaccactttc	2100
tttgtttatt	gattttgttt	ttctttatct	gattttttatt	tttattttatt	tattaattta	2160

ttttgagaca	gagtcttgc	ctgtgggcca	ggctggaatg	cagtggcctg	atcttggctc	2220
actgcaacct	ctgcctcccg	ggtttaagcg	attctcctgt	ctcagcctcc	cgagtagctg	2280
ggattacatg	catgagctac	tgtgcccagc	cttgggtttt	cttttgagac	agggttttgc	2340
tctgtcacc	aggctggagt	gcagtgggtg	agtcatagct	cactgcagcc	tcaaagtcct	2400
gagttcaagc	aatcctcttg	cctcagcctc	ccaacgtgct	gggatctcag	gcgggagcca	2460
ctgcgcctgg	cccgaaccca	agctttctta	tcccaagcgc	tgacctttat	caagttgacc	2520
taatccttta	tcatctccta	agtgtccctc	atgagtgate	acttcacatt	cctccacat	2580
ggagagctca	cccactgggg	cctatttttc	ccattggaaa	agtgtggtta	ttggaagttt	2640
cctgtttttg	gaaagaacag	gattggagggt	gctctctggg	gtgtcctcct	accaagcagc	2700
ctgttgaagg	cctcgtggtg	ctcagggagc	acgagcgaca	ctcgcctgct	cttcagcttc	2760
atcttgaggc	cacacagcat	ctccgccacc	cagatctcct	caggctcagg	ggcgagcacc	2820
ttcctgtggc	ctcctccga	ctcctcagat	ttgtcccacc	actccatctt	ccttttccag	2880
caaaaggacc	tatgcggggg	gctgggatct	accccagggg	ctgagtaaa	aaaccaggcc	2940
acggtgtaat	gcttctgcag	ttgatcacac	tagagcccga	cccaaaaccc	caaaccactc	3000
tccatcctcc	ccagcctcgc	agactgctgg	cttctccaag	ccatctttcc	ttctgtctgt	3060
ctcctctgct	gagctccatg	tgcgcctcct	tctcctcccc	attctcccgt	ttctctgtcc	3120
tcagaacact	tcctcatatc	cttccctggg	ccctggctct	ctgagtcctt	tttttttttt	3180
tttttttttt	gttgttgttg	ttgagaaaca	gtcttgcctt	gtggcctagg	ctggagtgtg	3240
gtggtgcgat	cttggctcac	tgcaacctct	gcctcctggg	ttccagtgat	tctcctgctt	3300
aagcctccca	agtagctggg	attacaggtg	cccaccagaa	cgccagctc	atttttgtgc	3360
ttctagaaga	gacagggttt	caccatgttg	gccaggctgg	tctccaactc	ctggcctcaa	3420
gtgatctgcc	tgccctggcct	cccaaagtgc	tgggattaca	ggtgtgagcc	actgaacctt	3480
gcctcagtac	ctccattctt	cccacacacc	ctcctcacgt	gctccttctt	gacttctggg	3540
cccgccttcc	cttctttttt	tttttttttt	gagacagcgt	ctcactctct	caccagaat	3600
ggaatgcagt	ggcactatct	tggctcaaaa	caacctcttc	cacctgggtt	caagcgatta	3660
tcctgtctca	gcctcccgag	tagctgggat	aacaggcatg	cctggctaatt	ttttgtatcg	3720
ttagtataaa	tgacgttttc	ctatatgttg	ctggttgggt	tgaacaact	gacctcaagt	3780
gatccacca	tctcagcctc	ccaaagtaat	gggattacag	gcagtagcta	ccacaccggg	3840
ccttcgtttt	tcttttgaca	cagggttttg	ctctgtcacc	caggctggag	tgcaagtgtg	3900
cagtcatagc	tcactgcagc	ctcaaagtc	tgagtccaag	cagtcctctt	gcctcagcct	3960
cccaactgic	taggatctca	ggcgtgagcc	actgcaccta	gcccgaaccc	aagctttctc	4020
atcccaagcg	ccaaccttta	tcaagtctag	ctctgtcttc	tattgtctcc	taagtgtccc	4080
tcagtagtga	tcacttctga	gtcctcctgc	gtggagatct	cacccactgg	ggcgctatct	4140
ttcccatagg	aaaagtgtgg	ttattggaag	tttctctttt	ttagaaagaa	caggattgga	4200
ggtgctctct	ggggtgtcct	cctaccaagc	tgactgttga	agtccttgtg	gtgctcaagg	4260
aggatgggtg	acactcgctg	ttgcttcagc	ttcatcttga	gcccacacag	cgtctccact	4320
accaggtct	cctcaggctc	aggggcgagc	tcctctctcc	gctcctcctc	agattcatct	4380
gaccactccc	tcttcttttt	ccagccaagg	gacctacatg	gggggctggg	atctacccca	4440
ggggctgagt	aaagaaacca	ggccactgtg	taatgcttct	gcacttgatc	accttagacc	4500
ccgacccaaa	accccaaacc	actctccatc	ctccccagac	tgcagactg	ctgacttctc	4560
taagccatct	ttctgatttt	ctcctctgct	caaccccatg	tgccgctcct	tcccctcccc	4620
attcttctct	ctctctgtcc	tccgaacgct	gcttcatgtc	cttccctggg	ccctggctct	4680
ctgagtcctt	ccttttttgt	tttgttttgt	tttgttttga	cacagaatct	tgctttgtca	4740
ccagggttgg	agtgtagtgg	tgcaatctca	gctcactgca	acatccatct	cctggattcc	4800
atttattctt	ctgcctcagc	ctctcagggt	gctgggatta	cagggtgcctg	ccataatgcc	4860
cagctcaatt	ttgtactttt	agtagagaca	gggtttcacc	atgtttggcca	ggctgggtct	4920
aaactcctgg	cctcaagtga	tccgcctgcc	ttggcctccc	aaagtctctg	ggttacagggt	4980
gtgagccacc	gcacccagcc	tgaattttct	cattcttccc	acacaccctc	ctcaggttct	5040
ccttctctgac	cgtgaccctt	tcttttcttt	tcttttcttt	tttttttttt	tggagtgcag	5100
tagcgtgac	tcagctcact	gcaacctctt	cctccagctc	tcaagtgatt	ctcctgtctc	5160
agcctcctga	gtagctggga	ttacagggtg	gcaccactac	cacttggcta	atttttatac	5220
tttttagtaga	gatgggggtt	caccatattg	gccaggctgg	ccttgaactc	ctgacctcag	5280
atgatccgcc	cgctcgggcc	tcccaaagtg	ctgggggttac	aggcgtgagc	caccgcaccc	5340
ggcccccttc	cttctgtctta	gtcaatccta	tcccacctct	tcttccacca	gtccccctac	5400
ctgatgggtc	caacacttca	tcatccacca	cctcctggag	ggggtacccc	gaggtgctcc	5460
gctggggact	ctgctcattc	tggcgggtgc	gttgacggct	ggtcgtgate	tttcccgtaa	5520
tctgtcccct	cttacggaac	ctagtctccg	tctgtcccat	ggccttcttc	tggacactgc	5580
taggatccag	aagagtatgt	tatcaattct	caagcctagg	agaagtccag	agtgagagac	5640
agctctgaga	agatactgtt	gtccaactga	tctccaggca	ccacggagtc	cggctccctcc	5700
aatcaggaag	gtcgggaatct	ctgatgtcat	cgttcatgcc	aacctggcaa	ccagtttgaa	5760
aaaaaacac	atgtaactgc	caggctgac	tcttgcctg	gagatcctgg	gtgaatggta	5820

tctcctgcc	ctgtcccaac	ctcagacccat	tgtccaaaag	catcttcagg	gactccacat	5880
ccctctgttc	cctgtcccag	cagaggctgt	gtcctctcca	ctcaaagcct	gaagcatgtt	5940
ggggtctctt	cgtctctgta	cgtgccatt	tcagagtcca	gtctgggtggg	agagggaaca	6000
gagtgggaaa	gaaaactagg	gtaagcagaa	acgatgaaac	cttataagag	tgagattatc	6060
atgtacaaga	gtgagattat	catgtacaag	agtgtagatta	tcattgtacaa	gagatcccag	6120
gaatactgac	ttgatgaaaa	agtcacatca	gagcactcag	tttggcagag	cttttctgct	6180
gaatgtttac	tcacattcac	tgtccaagat	tctgtactgg	gggtacatac	gtcctctgcc	6240
ctaaggcaat	tttgagtcca	agagacattt	tgaggcctaa	aaatcatagg	aaactgcccc	6300
tgagctcaca	catatttcca	atggagctca	cacatatttc	caatgggtgc	cccaatttca	6360
gggaatccat	ggattaccta	agccagcccc	tccagtctcg	ctaagaaact	ctagtctata	6420
tatcaagttt	tgtatcatat	gtattgtctt	gaactcagaa	atttcccttc	catttatgga	6480
ttctatgaat	aaaatatcac	atgtacaaaa	agactaagtc	gaaaaatttc	agctgtgcac	6540
agtggtctcat	gcttgtaatc	ccagcacttt	gggtggccaa	gggaggaaga	ttgcctgagg	6600
ccagcagttc	aagaccagta	taggcaacat	agcaagagcc	catctctaaa	aaaacaaaac	6660
caaaccaaat	tagccaggtg	tggtggctgg	cacctgtgtt	ccaactactt	gggagactca	6720
tgtgacagga	agatcacttg	agcccagggag	ttagaagctg	cagtgtgcca	tgatcttgcc	6780
actgcactcc	agtctgggca	acacagcaag	atactgtgtc	aaaaaatatt	tttttgataa	6840
aaaataaaaag	agttacatga	cattcagaga	ccatccaaaa	aacctgcggg	ttcccggctg	6900
ggctcagtg	ctcatgcctg	taatcccagc	actttgggag	gccaaagtgg	gtggatcact	6960
tgaggtcagg	agtttgagac	cagcctggac	aacatggtga	aaccccatct	ctactaaaaa	7020
tacaaaaaat	tagccaggca	tggtgggtga	tacctgtaat	cgcagctact	caggagaggg	7080
cgctggagaa	tcacttgaac	tcattggtcg	caggtgtcag	ggagccaaga	tcgcaccatt	7140
gtgctccagc	ctgggcaaca	agagcaaaac	tccatctcaa	aaaaataaaa	gaacctgcga	7200
gtgagttccc	acacgttttc	ctgatgggct	gctgctttcc	taggagtctc	tcgctcatag	7260
aaaaggcaca	aactgaaaga	ggaagcagat	ccattgtctg	tggaagtccc	attgttagga	7320
agctctgctt	ttctggagtt	caaattcgca	ttcatgacgc	tttaaaccgt	cagagctggg	7380
tggtcctctc	tacaacaaaa	tcgtttgtct	tctctctcct	agttaacagg	ctttcaataa	7440
ttagaagatc	aatgtttctga	ccccattaaa	atttctcttt	tgtggaatga	aaagctctga	7500
tttaacccat	cttcaagcct	ggtttgatgg	aggaataggg	gctgagtcac	ctgcatttcc	7560
cctccctgca	caaagtcctg	ggcccagatc	tggtgctgtg	ctctgctgag	ggtggggtga	7620
accaggaagc	acctccctct	acatctcctt	gatgaatggg	tataatgggt	gcatggaac	7680
tggtgcttgt	ttgatgacct	ggggctgggt	gggcctctga	gagcctttat	agctgattgc	7740
cttttgggag	agggcaggtg	ggagccccc	cctgtcttat	gagtcacccc	aaaggtgcat	7800
gggcaggcag	gtgctgggga	atcggctact	ccccagagct	tggtgctggc	atccctgtgg	7860
cccctctggg	agtctggagc	ccattccctc	acactggtac	tctctgcagc	tggtggacatc	7920
tgacttagga	agacaggaca	cggcatggaa	gctggcctct	gcccagaagc	catgacattc	7980
tggtcaccag	cctgatgcta	taaaacagat	gtcacggccg	ggcatggtgg	ctcacacctg	8040
taatcccagc	acttttaggag	gccaaggcgg	gtggatcatg	aggtctggag	ttcgagacca	8100
gcttggtcaa	catggcgaaa	tcccgtctct	actaaaaata	agaacattag	ccaggtgtgg	8160
tggtcacatac	ctgtagtccc	agctcctctg	gaggctgagg	caggagaatc	acttaaaccc	8220
aggaggcgga	gattgcagtg	agccgagacc	acggcattgg	actccaggct	gggcaacaga	8280
gcacgactcc	gtctcaaaaa	caaaaaaaa	cgagtgtcac	ctggggctac	ttggccagac	8340
acagagagca	aggagacatc	cctattatct	gtcaaaaaata	attgttgggg	ctgagcacag	8400
tggtcctatgc	ctgtaatctc	agcacttttg	gaggtcggag	caggaggact	tgaggcctag	8460
agtttgagag	cagcctgggc	aacatagcga	gcacccatc	tccagaaaaa	atttaaaaaa	8520
tggtctggcg	cagtggctca	tgctgtaat	cccagcactt	tggtgaaacc	ccatctctac	8580
gtcatttgag	gtcaggagtt	tgagaccagc	ctggccaaca	tggtgaaacc	ccatctctac	8640
taaaaataca	aaaattagcc	gggcatgggt	gtgggcacct	gtaatcctag	ctacttgagg	8700
ggctgaggca	ggagaatcgc	ttgaaccagg	gagggcgagg	ttgtagttag	ctaggatcat	8760
gccattgtac	tccagcctgg	acagcaaaagc	tagactccat	ctcaaaaaaa	aaaaaaagta	8820
aaaaatttaa	aaattagatg	ggcatgggtga	catgtgcctg	taatccaggt	actaagggaag	8880
ctgaggtagg	aggatgactt	gagtcctagga	gttcgaggct	gcagtgtgct	ctgatcgcac	8940
cactgcactc	cagcctgagt	gacacagcaa	gaccctgctt	caaaaaaaa	aaaaaa	8996

<210> 648

<211> 14976

<212> DNA

<213> Homo sapiens

<400> 648

gaggggcccgc ggcacggga ggacggagag gcggaaagga tggcgctgtg acagccgggc 60

cggagccctc	gcgtccccac	cccgcgccct	ggccgctggg	ccggcgctg	agtgcgcgcg	120
ggcggggg	gcggcgccgc	ggccccctcc	ccgggtcccg	ggcggtggg	ccgcggcaga	180
ggcggggg	ccgaggctgc	gccgccgcgc	ccgcgcctt	tggtgcggg	ccgccgggga	240
ggcggggg	gccggctctc	gccgccgggc	aggtgcgctg	gggcgggag	ggggccaggt	300
ggggaggcg	gccgggcgga	gggggcagcg	gaagcgctcc	cggcgcggtt	ccgcggagaa	360
agggaaatgg	ggcaagatgg	ctggagaaat	ccgaacgcgc	ccgggggcgc	ggcgggcggtg	420
gcgcaggcgg	ggcaggggcg	gcggcgggcc	tggttgccgc	accttagcgc	ggggaggcgg	480
cccctccac	ctctgccccg	gagccggcag	ggagaccgcc	gccaaagtctg	ggccccagct	540
gcaggcatct	gaagccctaga	cccatccatg	ccgcgttcgc	ctatcttttt	tggaatatc	600
gaaggaaccg	actttgaact	ccagagggat	cttttctttg	gaggttcccc	gatgcagccc	660
tcaagatgca	tccgcactcc	acacctagga	attgcccgcg	cccatagagg	gcaggagtgc	720
ggccctttgt	actgttccaag	agtcagcgaa	ctagaattt	gcagccaga	ggcaatgggt	780
tatttccctg	tcgggggtggg	ccccagccga	tttctgcacc	tttttgggta	tccaggcata	840
accctcacta	tgtttctactg	actcctgcgt	ttgcaaagtc	ccttaaggta	gaatgacct	900
attttctgaa	ccagctcgtg	gacagaacct	ttgaatttgg	aaaatccagg	caatgggcct	960
actgagccaa	ccgctccgcc	catgcttaac	tggttcttag	cacccattcc	agttgagtaa	1020
gtgtccaatc	tggttccaga	caccttcact	gataggaaat	cagcaccttt	cccctgcctc	1080
tgattcctgt	ttgggtggca	ctggctgtga	gaaagtactg	cctttctcac	tgcttaaaac	1140
cttttccagg	agtattttatc	cactggccgg	cctctgttct	gccgtccagt	ctctacaaac	1200
cagtctgggt	tctcttcccc	agatagcttt	ttaaatat	gaaggcagcc	agatacgta	1260
tctaccaca	gcctctctta	tcataattaa	acatgtcacc	ctgtagcttc	ctggccgact	1320
cttgtttcc	tacttccctc	cagcgggaac	agtgtctggg	gctaaagagg	tttgtatgtg	1380
gtcagcctc	ccccatcata	ggctttgggg	aggtcacagt	gacacctggt	ttttctgaac	1440
ctgaatcttg	cttgccagaga	tgaggtccac	agcctaccct	ctcaatttga	gcctgaaaga	1500
agaggaagag	gaagaagaga	ttcagagccg	ggaactagag	gacggcccg	cagacatgca	1560
gaaagtacga	atctgtcttg	agggcggatg	ggtaagtaag	aagggtgtga	gtccacacag	1620
ccagcagatg	caggcctgag	agcccagctt	gctttaagtc	tcctcctcag	acagacgtgg	1680
gaagtaaaaa	tagcccgacc	cggtgtgttt	gcattcctga	gaaaacagct	ctgtggcttt	1740
aaaaggcagt	gcaagaatg	gaggagggtg	tatggaaaca	gtccctcagc	catgtagctt	1800
gtcatcgttc	aattggaagt	cctagaagcc	aggacctgt	ctctctcggt	caccactta	1860
tcctgcactg	cgtttgatgc	caggcacatt	gtaggcacca	agtaaatgtt	tggtgactta	1920
ctgtgggtg	aagggaacca	ttttaaataa	gactcgagtc	attgggttga	catgagaggt	1980
taggctagtt	ggttctgtgt	gagcacctct	taccacagtt	gacacaggag	agctgcctgt	2040
ccagctgacc	tggatagaaa	tggtgggcag	cagggaatac	agagattcag	ggtatacacg	2100
cagaatagta	tgatagaggt	cggtttatac	aaatgcaaat	gcagtagata	cttatagtta	2160
cagatagtta	ttaccgtag	ttactggact	tcgtggtaat	taggcatgaa	tagtaaacat	2220
tttaaataag	caacaattg	acattccttt	tctctgctta	ttttccgttg	tgataaaaca	2280
ttgtcagtat	acatagtatc	ctttgcttcc	atgaagagcc	cctatccata	caagcatggt	2340
acttctaaat	tggtccctac	cagaggagag	aaactgggatg	cagaaagatt	atctgccttg	2400
ccctaagggt	acacatgaac	actgacattt	gttcttcaaa	acaggtctcc	tgagctgcac	2460
ccttaaaagt	aatgcatttt	accatatgta	tgctatacct	taatttaaaa	aaaaaaaaaa	2520
cagtgcacc	acaggctctc	agtttgccag	tctagctgtg	gacaccgcgc	tgccctttgtc	2580
tcacagtggt	tctttgcccc	ccacatcctt	cttcccaatt	ctgatccaag	caggcgctcag	2640
gtctatttag	cctggaacaa	gaactcaagg	cagtcaaaac	tcagggtctt	gaggctagat	2700
tggtcaaccc	agaacatcta	aatggagagc	cttgagaaac	aggtgcaatg	aaagtgaatg	2760
ttgggacagt	gaggaaggag	caagatgaag	accaaccatg	cttaggtggg	aaaagaaggga	2820
agtaaccaga	agggctggag	gagggagtcc	agcagctggg	ggtgctgggg	attgggcatt	2880
tgtggcctcc	aggcaatcag	ccatccatcc	acagttacca	agcacagtgc	tgggcgtaaa	2940
gagagactct	tttctgatg	gaatttccag	tcttgtaggc	aaggcaggaa	agtaaacata	3000
agtaatagta	agcacagtgt	gcagagtgca	gtggtggaag	tctgcaagga	tgaccaggga	3060
gccaagatga	gggttagcct	cattcaggct	gagaactccg	gggttctctg	gacaaggcct	3120
aatcttgagc	agtgagcaat	tttgccccc	cccctggaca	tttggaaca	tctagaaaca	3180
ctacccctt	tccccacccc	tggatatgtg	gcaatatctg	gaaacacttt	tggtggctctg	3240
acttggtggg	ggtgcgttgg	ggactgggag	atcctcctgg	catctagtgg	atagaagcca	3300
ggggagctgc	tagatatcta	cagtgcacag	gatgcccccc	caccaccaca	cacacacaca	3360
catacacaca	caacaaagag	gtaactggcc	caaaatgtca	gttggtgctga	ggttgagaaa	3420
ccctgctcta	gagcattaga	agaaaagaat	ctgtttttta	aatatgtatt	ttggttatag	3480
agaattatgt	taggtgtgac	atgaaagct	tttcaagcat	aagaactatg	ataatatatt	3540
aggataaaaat	tccatagaat	tgaatatagaa	atacaatttt	aagtagaaaa	aataaaaaat	3600
gtgctttgaa	ctgagtctta	gtcattatgg	aatcagccaa	gggaagggaa	gggggttgca	3660
ttccaggcaa	gaggacagca	caggcaaaag	cactgaggag	aggagcttgg	gtgcagagtt	3720

aggagcagct	cctgcagctg	gaacctgaaa	ctcatggcag	ggagtggaag	gggatcagggt	3780
ataggaggcc	aggccagggg	ccagagccag	ccaggaggac	atgcagtgt	acgccagcga	3840
gtttgagctt	tctccttagc	tctgtggaat	gaggccttag	cccatctttc	taaggagggc	3900
ctcaggctct	ctacagccac	catgctaagg	cctgagtggc	ctgctaagaa	agcaaaagctt	3960
tggcatcaga	ctttctagct	ctgtgacctt	ggacaagtta	cttaaccact	ctgtttccctt	4020
acccataaaaa	gtgaggtagt	gatccccatg	tccctagttt	agcggattca	gtgagagaat	4080
atattttatat	gattgagtgt	cctatacagt	gcttggccca	tagcaggcac	tccatcagtg	4140
gatcagtaca	aactacccca	accccttccc	ccgagatccc	tgcgtctttg	ctgggtggct	4200
gcaaggcctt	agcgaggctg	tgcaagggtg	aagcacttta	caacatttac	cctttgagat	4260
agcattggaa	tgccaacttc	ctgagcagag	caaggcagtg	cacacaagct	agaggaagaa	4320
cacttatcca	gtgagccctt	gatcttctga	ggaaaggag	gagggcaggg	actgaaagtc	4380
cctacctgca	aggccaagga	gggtgtctg	gagggtgtac	acagactgcc	tgacttctca	4440
gttttgcccg	gggcccggccc	tgtttacctt	ctgctatgtt	gagccagata	aaaggcctct	4500
gtggagcgag	gggaggcctg	cgcagcaggg	cctggctgaa	ggatcgctcc	attctcacag	4560
aggcttgctg	tgaggagaat	gtctaagcca	ctacactgtg	cctctggagc	ataatgtggg	4620
cttgtttgaa	gacccctcgt	ggctcagtc	ttaataggaa	gagatgaatc	ctgcaccagc	4680
ccccagcttt	cttctgcag	cttcagggtt	cctgtacctt	gatgttttta	ccaggcctag	4740
aatatgttac	ccccctaag	agtattgatg	gccccctga	aatgacaggc	atagacagtc	4800
ctgttcccat	tttatcagca	aagggaagg	gactataaat	aggtatgacc	tagatctgga	4860
acttcccagg	gagaaaaaaa	ggccaaagag	acagttcttt	aaaagcctgg	gaattgggaa	4920
aggagtaggg	tggaaaattc	ctgggctgac	tggctttcca	gggtgaggaa	gtctgaggaa	4980
agcctgaaga	cgaatccatt	ttacctcttc	atatttcaca	cttagggatg	tttgtccatt	5040
cttactccaa	agagtaggtt	tggttttatg	acagataaaa	tttaatgatt	ctttgaaaca	5100
gttccaagta	gaacaagaga	agggaaatcc	agagatttgc	ctagatcgta	tattcaaaag	5160
cacatttttc	agtgactact	agctacagga	agtgctctcg	gcttagggaa	gcaaaaagga	5220
gtaagtacag	gtcctgcttt	caacaagctc	agattctagt	ggagggagca	gacaagtcaa	5280
ccaaaagaat	tctgcagtg	gatgagtgcc	ccgggagtg	ggagcccagg	acatttcagg	5340
gacatgtggg	tgtgctcaca	gcgtggcaca	gagtggtgtt	cctcgggagc	agggattttg	5400
ggctgagtc	tggaaagatg	gtgggtgtca	gccagaccaa	gaaaggggag	gccctccaag	5460
gccaggggag	aatatgggccc	aagggtgtgg	ggcgttgggg	aatggttgtt	cagggaaactg	5520
cacacagctg	agtacaagtg	gagcacagag	ctggggagag	ttgaggggta	gtcatcaggg	5580
aggcagctgt	gctcgggtatt	gctggatcct	tgggggtcagg	cggtgtgtgc	cccaaaacgc	5640
aacccccacca	tttattggct	atgacattag	cctggaaatg	agacctctcc	aagcccatat	5700
tctccttgat	taagtagggg	catggtggct	tgtgcctcta	atcccagcta	ctagggaggc	5760
tgaggcagga	gaatggcttg	aactcaggag	gcagagggtg	cagttagcca	agatcgtgcc	5820
actgcactcc	agcctgggca	acagagcaag	actccatctc	aaaaaaaaaa	aaaaaaaaata	5880
ggcgtatcta	tccttcacac	ggccccatgc	agggaaataa	tgaagcagtt	acaggccctt	5940
tcctagtacg	gtcttcctat	gtatgaggtg	ctgtggaggt	ggggagagaa	caagggggct	6000
tccttgggtc	agggaggaaa	ggccaatgta	tgtaatgtac	tgttggcctg	acccctgaag	6060
tggctgcagg	ctatatagca	tatggacact	aattttctaa	gctaaggaaa	aacagtatca	6120
taatcaccca	gacccaagat	acagcttttg	gaaatagctt	tgaaggcaag	aatacaaaat	6180
aaccagcctg	aaacaagcca	tccagtgcct	tcttatcact	aaataggatg	agcttttgag	6240
taggattttt	aatgactgta	ataagaaata	cagttaaaaa	caaaaagagg	aggttgggtt	6300
gggtggcctt	gctgccttgg	gctactgagg	agccccctgg	tgctgggcca	ggaagcagag	6360
gaacaggggg	gggatgcagt	cctttgggct	ttctgcctac	ctggtccagg	atcaaagtga	6420
atgagtttgc	tctggcatct	cattacatat	attaagctgt	aattagccct	tctttcttcc	6480
tcttcatgct	cttggtgatt	ggaaaggcca	aataggggcc	cttctctcag	tggctcctcc	6540
ctgggcagct	gtgggttcca	agtctaacac	tttggttagt	acccttggaa	atgcagtgcc	6600
ctggaaaccc	acaaagatcc	cacggagggc	agtgatecta	ttcagattta	caaaccacac	6660
tcaccccgcc	cggggccgag	ggtctttttc	tggggtggga	gggaattggg	ggtgcttgtg	6720
ttggtgggac	actttgtctg	ggtgtgggtg	gcttaagtct	tgggtcagag	gtgagccgtg	6780
agcagctctc	accacagtgc	atgaggggtg	gatgtcccat	gtcctccaac	cgggtgatcat	6840
ggtaggggagt	tagttttctt	ctcaaagtgc	tgcttacctt	atctgaactg	aggggtggcag	6900
ctgctgtggg	gggcacagaa	ggactgtgct	cttgcccttg	ttggcttcca	gcagctgtat	6960
gaatgtggac	agtccgtttt	cccttgggtc	aggggtccctc	acctgacctg	tgagaggaca	7020
ggctgtgctg	ggctgtctgt	aagggtcctg	ccgctctgaa	agtctgtctg	catatgcctg	7080
tttgtcattg	tgaaggggct	gttcaactct	ccaggtaccg	gccctatttg	atgaggtggc	7140
catatatattt	tccgatgagg	aatgggaagt	tttgacggag	caacaaaagg	ccctctaccg	7200
ggaagtcatg	aggatgaatt	atgaaactgt	cctgtccctg	ggtaaagctg	tgttttccctt	7260
tgtctcctgg	aagctctgag	cccagagaat	tgtttccatg	cctctcttct	ctggtatatc	7320
caatgtccct	ctctcctgaa	cttagacctt	gcctcctcaa	tgtctgtgcc	catttatttc	7380

aatttttggat	ttggggcagta	tatcaatatt	gtgtcaccct	actcggcaat	ccgtgctgcc	7440
tcagaactgc	ccccattcaa	cccaggcatt	cacattttaag	gataaaaacc	atgtaacctt	7500
agaaatgtca	ccatggatct	gggcctgtgc	ctcactgttc	cttacgagag	aaggcaggcg	7560
ttaatgtttac	cctgtcagcc	tcagaagttt	ggggacatac	cctcccaaag	actgttttgc	7620
cctctcccca	acttccaccc	caaattgata	tcacacatct	tatcagcaga	atgtaatcat	7680
ttgaagagat	ttcccagttt	gcttatacag	gtaccaaaat	gttaattgga	tcagcagctg	7740
cattcaccct	tctccctgct	aaatgcagtt	cttttattgt	tgggtgccaat	accatccctc	7800
attaggagag	atctacccat	tccttttagac	agacctatct	tccattatct	tttttcttta	7860
agtatccctg	agcctttttc	cccttgtttt	tcacaaagaa	ggggagagtg	gctcttaagt	7920
attttgaagt	acttattttg	gtagtgtctc	aggacagtaa	cacacagctg	ttacctatct	7980
tatttcctat	aaacagaatt	cccattccct	aagccagaca	tgatcaccgg	tttggaagg	8040
gaggaggagt	ctcagaattc	tgacgagtgg	cagctccaag	gaggcacctc	tgcaggtaact	8100
acaagtaaag	cagttcagcg	tccatccagc	tgggaacatt	gtggagtggg	attttcagtg	8160
tacattccac	ggggtattta	agaggtagaa	ggattatggg	ttttggagt	ttgaaatctc	8220
cctcttttga	gtgctaaatg	tgtgacagt	tgtgacaggc	aactgtcttt	acctcagagc	8280
ttccattctt	cctctatcag	ctctgagtaa	caagacttga	tgtatgacct	tgtttgtgga	8340
tgaagcaaaa	tgaggcttgt	gcagcatttg	gtctagtga	ccttctggct	gaacagggct	8400
ccctcagtg	cgtaccatgt	gcctctgcaa	actaagaata	gtgagaggaa	gcacacttcc	8460
tgagttacct	ggctccctgt	ccatctcata	ctggatagaa	aaagcaatag	caatcatagc	8520
atacatttga	gcaaatgtat	ctaagaagta	cctagtcctt	tgtcaagaaa	aatggttatt	8580
gaggccacag	ttgaataaat	atagcattgc	ctccagacgg	ccaaaatagt	tttatctttt	8640
ctccggaagt	aagagtttaa	aatgccatat	ttcactgact	ctgagacatg	tttttctccc	8700
attgctttac	tgtttctgaa	attgagaatg	cctcttaaaa	tcagtggcat	gtcatagctt	8760
aattagtagt	gttttctttc	ttaattggc	ataatgatgc	atcctacaac	tgatgacatt	8820
ttagtttggg	tgagatagg	taatttcccc	aaatcatatt	caacttctgt	gaccaccttc	8880
taaatataaa	gtgaaacctg	gttgcaccat	taatgtgcaa	gaactaattt	tctgccttat	8940
aagcttaact	ttgctaagt	tgggtttttg	tgtaggtttt	cttgggttcta	aagggatatg	9000
attcaggcca	tgatgcatct	ctgtaatat	atatggtagt	atgggttaaca	tttggcttct	9060
cattcacata	aaaagtattt	tgatgcaaac	atggccccca	aattattttg	tccaagcttg	9120
gttctctgt	tgagttccca	gctctgccac	tttctggctt	ggctaccttg	gtgcattatg	9180
taacctctgt	agcctccctc	tcttcactct	caaagaagga	acagtgatac	ttagagttaac	9240
tctattaaga	gaactaggtg	tgggtagtcc	acataaattg	gcataatggaa	aaggacttag	9300
gcaatgttac	ctgttattaa	agttactact	tttgggtgaa	ttcagattaa	ggtattctta	9360
gcattttcaac	ccccaaaaat	cagggtataa	gccattttac	ttactggcat	tatttttgcc	9420
cctcactatt	tgtctcccag	aaaatgaaga	atctgacgta	aagcctccag	actggccaaa	9480
cccaatgaat	gctacctccc	agtttctctc	gcctcagcac	tttgacagct	ttggcctccg	9540
tctgcctcgg	gatattcacag	agctgcccga	gtggagtgg	gggtaccctc	tctacatggc	9600
catgggctgt	ccagggtatg	acctctcggc	tgtgacata	gctgggaagt	ttcagttcag	9660
ccggggcatg	cgccgcagtt	acgacgcagg	gttcaagctg	atggtagtgg	aatatgctga	9720
gagtaccaac	aactgccagg	ctgccaaagca	gtttggagta	ttggaaaaaa	acgttcgaga	9780
ctggcgcaaa	gtgaagccac	agcttcaaaa	cgcccacgcc	atgcggcggg	cattccgagg	9840
cccaagaat	gggaggtttg	ctctgggtgga	ccagcgtgtg	gccgaatatg	tcagatacat	9900
gcaggccaaa	ggggacccca	tcacccggga	ggcgatgcag	ctgaaagctc	tcgaaatcgc	9960
ccaggaatat	aacattccag	agaaagggtt	caaggcaagc	ttgggttgg	gtcgaagaat	10020
gatgagaagg	tatgacctgt	ctctgaggca	taaagtgtcc	gtgccccagc	acctgccgga	10080
agacctgact	gagaaactcg	tcacttacca	gcgcagtgtc	ctggctctgc	gcagggcgca	10140
tgactatgag	gtagctcaga	tggggaatgc	agatgagacg	cccatttgtt	tagagggtcc	10200
atcacgggta	actgttgata	accagggcga	aaagcctgtc	ttgggtcaaga	caccaggcag	10260
ggaaaaactg	aaaatcacag	caatgcttgg	tgtcttggct	gatgggagga	agttaccacc	10320
gtacatcatt	ttgaggggaa	catatatccc	cccggggaag	tttcccagtg	ggatggaaat	10380
tcgctgccac	cgttatgggt	ggatgactga	agacttgatg	caggactgg	tgggaagtgt	10440
gtggagacgg	aggacaggag	cagtgtccaa	gcagcgagg	atgctgatct	tgaatggctt	10500
ccggggccat	gccacagatt	ccgtgaagaa	ctccatggaa	agcatgaaca	ctgacatggt	10560
gatcatccca	gggggtctga	cctcacagct	tcagggtgctg	gatgtcgtgg	tctacaagcc	10620
actgaatgac	agtgtgcggg	cccagtactc	caactggctt	ctggctggga	acctggcgct	10680
gagcccaacc	gggaatgcta	agaagccacc	cctgggcctc	tttctggagt	gggtcatggt	10740
cgcgtggaat	agcatctcaa	gtgagtcctc	ctccaagg	ttcaagaagt	gccatatctc	10800
cagcaacttg	gaggaggaag	acgatgtcct	gtgggaaatc	gagagtga	tgccaggagg	10860
aggagaacca	ccaaaagatt	gtgacaccga	aagcatggct	gagagcaact	gaagggaag	10920
ggaaaggtaa	ccactcagga	gtagatactc	agtgcctttg	ctgacatgtc	tgtgttctac	10980
aaacaccttc	tctccattat	tttctgtttt	taaagttccc	ttagagccta	cagtgcagta	11040

gtgtagatca	gggggtcccca	acccccaggt	cacggaccat	actgggtccat	ggcctgtcag	11100
gaactgggct	gcacagcagg	aggtgagcgg	caggtgagca	agcattacca	cctgagctcc	11160
gcccgtgtgc	acagcagcgg	catttagattc	tcataggagc	acaaaccctg	ttgtgaactg	11220
cacatgtgag	ggatctaggt	tgcaggctcc	tcaatgcctg	aggatctgag	gcggaacagt	11280
ttcatcccaa	agccatccta	ccaccacta	ccccgcactt	cctgggtccc	tgcaaaaatt	11340
gtcttccatg	aaaccagtcc	ctgggtgccg	aaaagttggg	gactgtcgtg	atagataaca	11400
gaccattagc	attttctcct	ttatatgaaa	catttattat	ttgatttatt	tgtgtctatt	11460
ttgctctgtg	gcttggaccc	agaaacactt	gtataatagg	tgaaatgaac	aaagaatgag	11520
ctgccagaac	atctgagagc	tgtaaagtta	aaattatttg	gacccaaaga	agcatagtct	11580
gacgttggtc	agttcacaca	aaattttgtc	tgaaaagcca	acttttttct	ttccctttta	11640
aatttgctg	aacatttagg	gccagtatgt	gtaactgaca	tgctgggaca	gttgactaca	11700
cttttctggt	cctgtaggac	tgtgacatag	ggagaacact	aagtgtgtcc	tccgggcctc	11760
gggtctcagt	cctggagcta	tctacagtat	gttaccagcg	agtaagaata	atagcttcta	11820
cttgcttttc	cctacagagt	tcaggagttt	taaaacgtca	tcttagtctc	attatgacct	11880
tcacatgggc	tatgacaata	atttcctgta	gtcagcagat	gtctgaagga	agatattttt	11940
taactgaatc	tttacaccaa	aaaaagaaaa	taaaacgggt	cgtatctagg	actctagtga	12000
gggctgagga	caataggcct	ggaattttct	gggttgagta	cacaagaaga	acagctttca	12060
aaggaaagta	ggaattggag	cctaactgag	acaacactag	tgaaatgacc	ccaccacct	12120
acacctccag	agaggaggag	gatgagcatg	tacagcaggg	gggacacca	caaagaacaa	12180
acaattcatt	tacctgttcg	ttctcatctc	cctaattata	aattaaattg	atcctccaga	12240
cagtgtttta	tatgaaggaa	gaagccacct	tttttacaga	ggacctgaaa	ccgtcaacca	12300
tcttcacaca	ttctttttct	ttcttttaaa	gtataaattg	gtatttccat	cttccttgct	12360
tttttctcca	aatgaaatgc	taatgggagc	cttattttac	ccacttcagc	tatataagtc	12420
catctgtgtt	tcaaagagtg	acttatgtct	cctgccttgc	ttccaaatta	aattgtactc	12480
atattgctga	atcccattgt	aattctggga	tccttggaat	tacaatggag	caagaagtct	12540
ttactattac	attcaaaatc	acaaaaattg	cttttttttc	ccccttgggt	cctccttgct	12600
ttgagaaacc	ccatgaatcc	agcctccctt	ttctgctgac	ccttatattg	cctgcattgg	12660
atatcaaact	gaattacatt	gagtttccat	cttttcttca	tttacctttt	gcttttccct	12720
ctccttgta	gataacattt	ttgtgcactt	ttaatttccct	aagctcctta	ccacctcagg	12780
gacatgatta	aaaacttcca	gaagaggaaa	ggagaaaaag	ctatgctaag	ttgcatttat	12840
gaatgttggc	ctgtaatat	ggtcatgagc	ttttgtctct	ctagtctgcc	acaatttctc	12900
ctgcagctcc	tgagggaagt	atgggagtag	acagattcac	agtgaacaag	agatttggga	12960
gaccaagtgg	gcataaaact	acgtcttggc	ctctatttgg	aaatctgaat	gatggaatta	13020
ttatgtttgt	taaaagttaa	acaaaaaagc	caagggttaa	ttcattttag	ttctctctgt	13080
tttccagcaa	atggaactct	gatttaaaca	gctggggatg	aaattcctca	agatgattat	13140
tcctgaaagt	gtggatgccc	tggatgccc	gggaacatca	ggaaaaggcc	acggggctct	13200
gaacagcccc	ggtccagaca	gcagcctgta	catccatccc	aggacacagc	ccagccctc	13260
cccacaccat	acaaggtatc	agaaaagtct	aggacctatc	atttcatcag	agacatgac	13320
agaaaagaaa	ctgcttctgc	cccatttctt	gttttggaga	ttactccatc	tgtccatcaa	13380
aagaaacctg	taaatatgaa	agaacaaagg	ttatttctct	gagaaaagac	aatttattca	13440
acaccaacga	gggactcatc	atatgggcac	aactctgggt	tccttctatg	gagaaaacct	13500
caagttaaagt	tttattctgc	ctttgaaaat	gcttccaaaa	gtagaccctg	tccccacaca	13560
ggtcaagact	acagagaagg	ctttgtagaa	atgtgtcacc	tatgtacacc	tgtactttac	13620
acatttctct	ttttggaaaa	atgagatact	tagaataaca	agaaaattaa	gacatactgg	13680
cctggtgcca	gcagatggct	tttctataga	caaactaggt	tagtgtggaa	gatataaggt	13740
aaaataaaact	atgctgtttt	atttatcttc	ccaacctgat	tggcagctag	acttttttag	13800
ggtctcattt	aatggccctg	tttttttcat	tattatattt	aatgataggg	caggatttct	13860
tatgcaagct	cttgtttctc	aggctgcctg	cagaagaagt	cgctataaat	tatctgttgt	13920
ctacatggta	caaggcccat	tgactcatct	gatgcttgtt	ttgttaattt	ctttaatatt	13980
tttatcacgg	ggcagtggga	gggcttgggc	tttttagccac	agctgtttta	agacttctga	14040
tctcctgccc	tgcaggaata	ggtgggaagt	cattgaattt	ttacactata	gtaatttgca	14100
ttccacata	agtttgagt	ttacgaaaac	attcctttta	agggatctgt	gctacacaaa	14160
atatgccagg	acctcacaga	caaagccatt	gctagaaatg	tcattccaat	gatcagatct	14220
ggaaacaggc	tgccataacc	acttttccct	cttgtagact	cagctcacct	gtatatttaa	14280
actgttcttg	gcactctgaa	acacctatct	ctactcaggt	actcattgtc	ctgttactga	14340
ttcacctttc	tgatcctttt	caaccagttt	tcccccaagg	ggggaaattt	tacttaacct	14400
ctagtatttg	aacaactcaa	tatttgaatt	gttgccccat	ttgctttttac	ctgtactgta	14460
ttcttgggtc	tctcaaatgg	cgtctaaacc	cagctacttt	gcattccaga	agtttccatt	14520
ccctccaatt	ccacctaatt	tttcatctgt	cctagttact	ggctctttct	tcatgtctta	14580
tttctcttgc	tttgggagct	taaaagattt	tacaagacct	aattttgggt	tccttctctg	14640
gagccatagt	taccctgcc	agaagagtag	aaaatgggtt	caactcctgt	ttcgtctcac	14700

caacacctct	gtgagtctca	tcatcagctg	agcgatgatg	ccttacaggt	tgcatagcac	14760
tggaactttc	ctagagtaac	ggctctgctg	ccagggtttc	tctgggctca	ttcttccact	14820
gacttaatta	tgatctatgc	ctaacagagc	cccagtacaa	ctattttgca	gaatggctgt	14880
tacctagaa	ttactatagc	acatattgag	atatagttgt	actccctagt	agataggaa	14940
tgaccccaac	aataaacttt	gataataaag	acaata			14976

<210> 649

<211> 720

<212> DNA

<213> Homo sapiens

<400> 649

gtcttccagc	attctatggt	cccaccaggt	gggtaggtga	ctaggaattc	aggccaggtc	60
ctagagagta	gtgagaagtt	ttccagtttg	cagtttcctc	tgtgctgtat	gtacagccat	120
acagcctatg	gaacctgaca	ttgcagtggt	cagcaggaca	cgggtcaaggc	tcctagctgc	180
ctctccatct	atggaactat	gaaatttcac	acatattccc	taggcagcat	taaggccag	240
gtatattgag	tagtccaaac	caaaaaacta	tattcgagta	tcagtttaaa	ttcttccaag	300
ccctaaaaat	tcttacgtag	tttctcacct	aaaactaatg	gcttggtgcca	agaactgaaa	360
ctaagctatt	gatttttttt	taagaagtct	taatctatac	ataagaaatt	acatacctgg	420
ccaggtgcag	tagttcaggc	ctgtaatcct	aacaaacact	ctgggaggcc	aagggtgggca	480
gactgcttga	gctcaggagt	tcattaccag	tctgggcaac	atgataaaac	cgtgtcttta	540
caaaaaaaaa	aaatttttaa	ttagccgggc	atgggtggtg	gaatctgtag	tcccagctac	600
ttaggaggtt	gcgatgggag	aatcacctga	gccagaggt	ccagtctgca	gtgagccatg	660
atcacaccac	agcactccag	ctggggtgac	agagtgcagc	cctatctcaa	aaagaaaaga	720

<210> 650

<211> 3126

<212> DNA

<213> Homo sapiens

<400> 650

cttggcaatg	tattaaacag	caggccttgg	agactagcac	ttgagttaac	acagccacca	60
caaccaccac	tgccatcatc	accttcccg	aaagcagcca	cctgtctggc	tcctggcttt	120
gtccagctgc	caacctaaag	catgtgccta	cgcaggaggc	gatgacattt	tggtctccacg	180
ttcaaagtgt	tttttttttt	cctttctcat	gtgttatttc	taaagataac	aaagggtcaaa	240
aggcatccag	cgttttctgg	tttctcataa	gcttctggtc	aatattttaat	ctggtttatg	300
gatttttttt	aggtcttcta	gatgccttct	tgaggctgct	tgtggccacc	cacagacact	360
tgtaaaggag	agagaagtca	gcctggcaga	gagactctga	aatgagggat	tagaggtgtt	420
caaggagcaa	gagcttcagc	ctgaagacaa	gggagcagtc	cctgaagacg	cttctactga	480
gaggtctgcc	atggcctctc	ttggcctcca	acttgtgggc	tacatcctag	gccttctggg	540
gcttttgggc	acactgggtg	ccatgctgct	ccccagctgg	aaaacaagtt	cttatgtcgg	600
tgccagcatt	gtgacagcag	ttggcttctc	caagggcctc	tggatggaat	gtgccacaca	660
cagcacaggc	atcacccagt	gtgacatcta	tagcacctt	ctgggcctgc	ccgctgacat	720
ccaggctgcc	caggccatga	tggtgacatc	cagtgcaatc	tcctccctgg	cctgcattat	780
ctctgtggtg	ggcatgagat	gcacagtctt	ctgccaggaa	tcccagagcca	aagacagagt	840
ggcggtagca	ggtggagtct	tttctatcct	tggaggcctc	ctgggattca	ttcctgttgc	900
ctggaatctt	catgggatcc	tacgggactt	ctaactacca	ctggtgcctg	acagcatgaa	960
atttgagatt	ggagaggctc	tttacttggg	cattatattct	tcctgtttct	ccctgatagc	1020
tggaatcatc	ctctgctttt	cctgtctatc	ccagagaaat	cgctccaact	actacgatgc	1080
ctaccaagcc	caacctcttg	ccacaaggag	ctctccaagg	cctgggtcaac	ctcccaaagt	1140
caagagttag	ttcaattcct	acagcctgac	aggggtatgtg	tgaagaacca	ggggccagag	1200
ctgggggggtg	gctgggtctg	tgaaaaacag	tggacagcac	cccaggggcc	acagggtgagg	1260
gacactacca	ctggatcgtg	tcagaagggtg	ctgctgagga	tagactgact	ttggccattg	1320
gattgagcaa	aggcagaaat	gggggctagt	gtaacagcat	gcagggttgaa	ttgccaaagg	1380
tgctcgcct	gccagccttt	ctgttttctc	caccttgctg	ctccccctgc	ctaagtcccc	1440
aacctcaac	ttgaaacccc	attcccttaa	gccaggactc	agaggatccc	tttgccctct	1500
ggtttacctg	ggactccatc	cccaaaccac	ctaactcacat	ccactgact	gacctctgt	1560
gatcaaaagc	cctctctctg	gctgagggtg	gctcttagct	cattgtctggg	gatgggaagg	1620
agaagcagtg	gcttttgtgg	gcattgctct	aacctacttc	tcaagcttcc	ctccaaagaa	1680
actgattggc	cctggaacct	ccatcccact	cttggttatga	ctccacagtg	tccagactaa	1740
tttgtgcatg	aactgaaata	aaaccatcct	acggtatcca	gggaacagaa	agcaggatgc	1800

aggatgggag	gacaggaagg	cagcctggga	catttaaaaa	aataaaaatg	aaaaaaaaac	1860
ccagaaccca	tttctcaggg	cactttccag	aattctctca	tatttggtgg	ctgggatcaa	1920
gcctgcagct	tgaggaaagc	acaaggaaag	gaaagaagat	ctgggtgaaa	gctcaggtgg	1980
cagcggactc	tgactccact	gaggaactgc	ctcagaagct	gcgatcacaa	ctttggctga	2040
agccctgcc	tcactctagg	gcacctgacc	tggcctcttg	cctaaaccac	aaggctaagg	2100
gctatagaca	atgggtttcct	taggaacagt	aaaccagttt	ttctagggat	ggcccttggc	2160
tgggggatga	cagtgtggga	gctgtggggt	actgaggaag	acaccattcc	ttgâcggtgt	2220
ctaagaagcc	aggtggatgt	gtgtgggtggc	tccagtgggt	gtttctactc	tgccagttag	2280
aggcagcccc	ctagaaactc	ttcaggcgta	atggaaaatc	agctcaaata	agatcaggcc	2340
ccccagggt	ccaccacag	agcactacag	agcctctgaa	agaccatagc	accaagcgag	2400
cccttcaga	ttccccact	gtccatcgga	agatgctcca	gagtggctag	agggcatcta	2460
agggtccag	catggcata	ccatgccac	ggtgctgtgt	ccatgatctg	agtgatagct	2520
gcactgctgc	ctgggattgc	agctgaggtg	ggagtggaga	atgggttcca	ggaagacagt	2580
tccacctcta	aggtccgaaa	atgttccctt	tacctggag	tgggagttag	gggtcataca	2640
ccaaaggat	tttccctcac	cagtctaggc	atgactggct	tctgaaaaat	tccagcacac	2700
ctcctcgaac	ctcattgtca	gcagagaggg	cccactctgt	gtctgtaaca	tgcccttcac	2760
atgtccacct	tcttgccatg	ttccagctgc	tctcccaacc	tggaaggccg	tctcccctta	2820
gccaagtctt	cctcaggctt	ggagaacttc	ctcagcgta	cctccttcat	tgagccttct	2880
ttccccactc	catccctctc	ctacccctcc	ctcccccaac	cctcaatgta	taaattgctt	2940
cttgatgctt	agcattcaca	atttttgatt	gatcgttatt	tgtgtgtgtg	tgtccgatct	3000
cacaagtata	ttgtaaacc	ttcgggtgggt	gggggccata	tcctagacct	ctctgtatcc	3060
cccagactat	ctgtaacagt	gccaggcaca	cagtaggtga	tcaataaaca	cttggtgatt	3120
gagtaa						3126

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/08276

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61K 38/00; C07K 1/00

US CL : 514/12; 530/350

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 514/12; 530/350

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,858,716 A (ELSHOURBAGY et al.) 12 January 1999 (12.01.1999), SEQ ID NO: 2, amino acids 438-644, columns 25-30.	1-4

☐ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

15 July 2002 (15.07.2002)

Date of mailing of the international search report

12 AUG 2002

Name and mailing address of the ISA/US

Commissioner of Patents and Trademarks

Box PCT

Washington, D.C. 20231

Facsimile No. (703)305-3230

Authorized officer

Gary Jones

Telephone No. (703) 308-0198

BEST AVAILABLE COPY

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/08276

Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claim Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claim Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claim Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:
Please See Continuation Sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.: Claims 1-4 in part, as they relate to SEQ ID NO: 300

Remark on Protest ☐ The additional search fees were accompanied by the applicant's protest.
☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/08276

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING

Note that Claims 1-12, 15, and 18, which begin with the words "Use of ..." have been treated as method claims with the phrase "A method of using" substituted for "Use of."

Groups 1-289, Claims 1-4 in part, drawn to a method of using a polypeptide for the preparation of a diagnostic or pharmaceutical composition, each group defined by a unique amino acid sequence selected from SEQ ID NO: 300-588.

Groups 290-578, Claims 5 and 6 in part, drawn to a method of using an antibody or a fragment thereof for the preparation of a diagnostic or pharmaceutical composition, each group defined by the specificity of the antibody used.

Groups 579-877, Claims 7-10 in part, drawn to a method of using a nucleic acid molecule for the preparation of a diagnostic or pharmaceutical composition, each group defined by a unique nucleotide sequence selected from SEQ ID NO: 1-299.

Groups 878-1166, Claims 11-12 in part, drawn to a method of using an agonist or antagonist for the preparation of a diagnostic or pharmaceutical composition, each group defined by the polypeptide bound by the agonist or antagonist.

Groups 1167-1455, Claims 13, 14, 16, and 17 in part, drawn to a polypeptide, each group defined by a polypeptide sequence selected from SEQ ID NO: 300-588.

Group 1456-1744, Claims 15 and 18 in part, drawn to a method of using a polypeptide for identifying binding partners, each group defined by the sequence of the polypeptide used.

Groups 1745-2033, Claims 19 and 20 in part, drawn to an antibody that binds a polypeptide comprising a sequence selected from SEQ ID NO: 300-588, each group defined by the specificity of the antibody.

Groups 2034-2332, Claims 21-32 in part, drawn to a nucleic acid molecule, each group defined by a nucleotide sequence selected from SEQ ID NO: 1-299. The first claimed invention, groups 1-289, lack unity because they represent a method of using plurality of polypeptides as diagnostic or pharmaceutical compositions. The polypeptides, identified as SEQ ID NO: 300-588, each have a different sequence. Because the sequence, structure, and function of each polypeptide is unique, the claimed inventions do not share a common special technical feature and unity is therefore lacking. Each individual polypeptide sequence is considered to constitute a special technical feature.

Groups 290-578 represent methods of using an antibody for the preparation of a diagnostic preparation wherein the antibody binds an amino acid sequence selected from SEQ ID NO: 300-588. The amino acid sequences SEQ ID NO: 300-588 lack unity as described above. Each antibody of groups 290-578 bind specifically to one of the polypeptides of SEQ ID NO: 300-588. The differences in protein affinity among the antibodies is based on differences in the structure among the antibodies and results in molecules with different functions. As a result, the antibodies do not share a common special technical feature. Because each method relies on a unique antibody, the methods will differ in their results and applications. Therefore unity among the methods is deemed lacking.

Although the antibodies of groups 290-578 bind specifically to the polypeptides of SEQ ID NO: 300-588, the antibodies are different from the polypeptides in their structure, sequence, and function, and therefore lack unity with the polypeptides.

Groups 579-877 represent methods of using a nucleic acid molecule for the preparation of a diagnostic composition wherein the nucleic acid is selected from SEQ ID NO: 1-299. Because the sequence, structure, and function of each polynucleotide is unique, the polynucleotides do not share a common special technical feature. Because each method relies on a unique polynucleotide, the methods will differ in their results and applications. Therefore unity among the methods is deemed lacking.

Groups 878-1166 represent methods of using an agonist or antagonist for the preparation of a diagnostic composition wherein the agonist or antagonist binds to a polypeptide of SEQ ID NO: 300-588. The polypeptides of SEQ ID NO: 300-588 lack unity as described above. Because each method depends on the ability of an agonist or antagonist to bind to a unique protein, and because the protein targets differ in their structure and function, the results produced by each of the methods will differ. Therefore unity among the methods is deemed lacking.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US02/08276

Groups 1167-1455 represent polypeptides of SEQ ID NO: 300-588. The polypeptides lack unity as described above.

Groups 1456-1744 represent methods of using a polypeptide of SEQ ID NO: 300-588 to identify binding partners for the polypeptide. The polypeptides of SEQ ID NO: 300-588 lack unity as described above. Because each method depends on a unique polypeptide sequence, the binding partners identified by each method will differ. Therefore unity among the methods is deemed lacking.

Groups 1745-2033 represent antibodies which bind specifically to polypeptides of SEQ ID NO: 300-588. These antibodies lack unity as described above.

Groups 2034-2332 represent nucleic acid molecules of SEQ ID NO: 1-299. The nucleic acid molecules lack unity as described above.

Continuation of B. FIELDS SEARCHED Item 3:

US Patent Database; SwissProt, PIR,
search for SEQ ID NO: 300

BEST AVAILABLE COPY